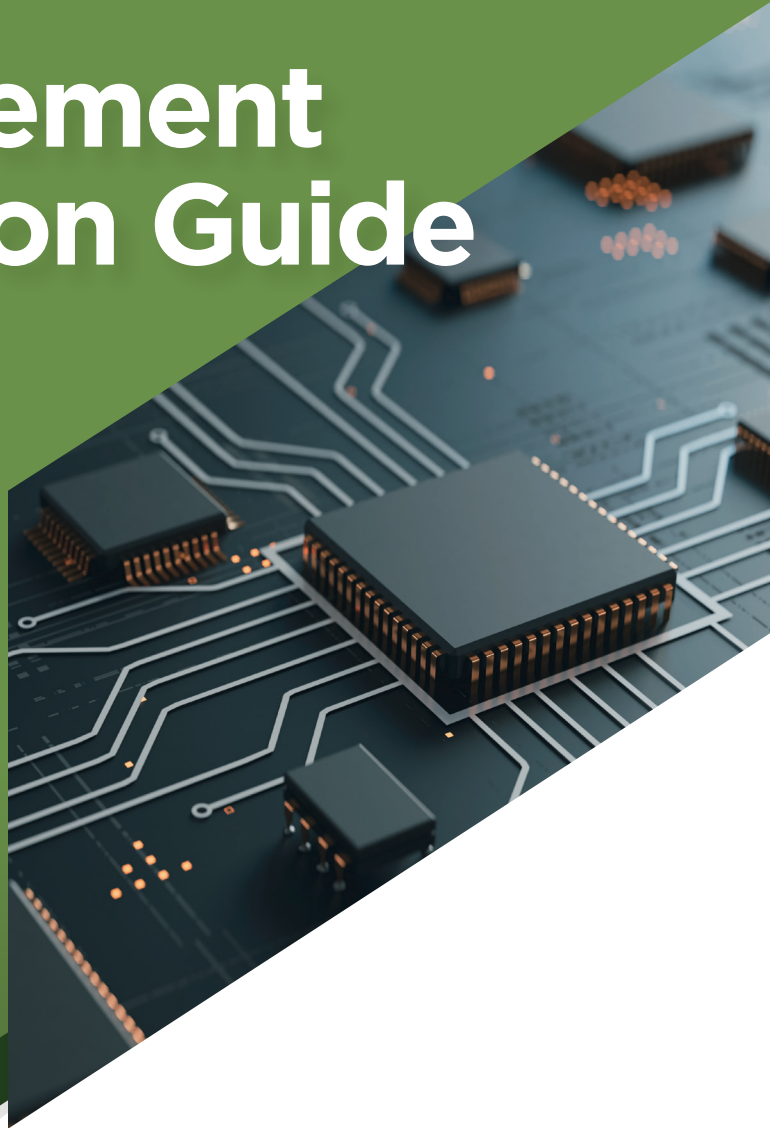


Power Management Selection Guide



Semi

Advanced Power Semiconductor

THE EXCELLENT POWER SOLUTION

Jump to High efficient High Capable Power Solution

One of Critical winning factor is minimize power consumption of applications. AP Semiconductor has been provided energy efficient products for power management such as Schottky diode, MOSFET, Motor drive since 2013.

This catalog will describe AP Semiconductor products in detail.

 AP Semi

Progressive Ecology

AP Semi thinks firstly clean environment & convenient future life. We develop versatile electronic good which will be eco-friendly high efficient products. These products set the high priority by focusing customer satisfaction with the lowest cost and more smaller form factor packages.

Advanced Technology

- Lead State of Art Power Technology
- Prioritize Product Line-up Efficiency
- Provide Smallest Package & Integrated Cost Efficient Products
- Competitive Power Solution Provider

THE EXCELLENT POWER PLATFORM

PRODUCT OVERVIEW

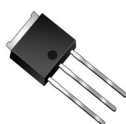


MOSFET

Super Trench MOSFET, Super Junction MOSFET



TO-252



TO-251



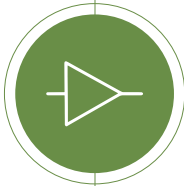
TO-263



TO-220F

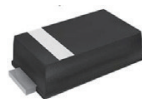


TO-247



Schottky Diode

3A to 60A, 60V to 300V



SMAF



TO-277



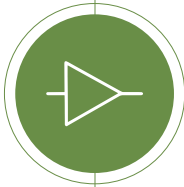
TO-252



TO-220F



TO-247



LED Driver

Simple Circuit Design



SOT-25



SOT-26



SOT-89-5L



SOP-8



LDO

0.15A to 2A, 40V



SOT-89



SOT-223



TO-252



TO-220F



Motor Driver

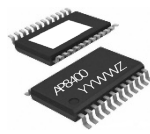
0.4A to 3A, 2CH/3CH/4CH



eTSSOP-16



eTSSOP-20



eTSSOP-24



DIP-16

MOSFET

HIGH VOLTAGE PLANAR MOSFET

Part NO	Package	Conf.	Polarity	BVdss [V]	ID [A]	VGS [V]	Vth [V]		PD [W]	Rds(ON) Typ. [mΩ]
							Min.	Max.		
AM18N20MD	TO252	Single	N	200	18	±30	2	4	48	0.14
AM18N20MF	TO220F	Single	N	200	18	±30	2	4	50	0.14
AM830RU	TO251	Single	N	500	4.5	±30	2	4	26.5	1.3
AM830RT	TO220	Single	N	500	4.5	±30	2	4	60	1.3
AM7N50LU	TO251	Single	N	500	7.5	±30	2	4	26.5	0.75
AM8N50LF	TO220F	Single	N	500	8	±30	2	4	26.5	0.72
AM1N60MD	TO252	Single	N	600	1	±30	3	5	30	8.5
AM4N60RU	TO251	Single	N	600	4	±30	3	5	26.5	2.1
AM4N65RD	TO252	Single	N	650	4	±30	3	5	32	2.4
AM4N65RF	TO220F	Single	N	650	4	±30	3	5	32	2.4
AM7N65RD	TO252	Single	N	650	7	±30	3	5	32	1.2
AM7N65RF	TO220F	Single	N	650	7	±30	3	5	32	1.2
AM10N65RF	TO220F	Single	N	650	9	±30	2	4	40	0.72
AM12N65RD	TO263-2L	Single	N	650	12	±30	3	5	60	0.68
AM12N65RF	TO220F	Single	N	650	12	±30	3	5	50	0.68
AM15N65RF	TO220F	Single	N	650	15	±30	2	4	70	0.49
AM20N65RF	TO220F	Single	N	650	20	±30	2	4	104	0.37
AM2N80SU	TO251S	Single	N	800	2	±30	2	4	31	5.4
AM7N80MF	TO220F	Single	N	800	7	±30	3	5	45	1.28
AM10N80MF	TO220F	Single	N	800	10	±30	3	5	48	0.93
AM10N90MF	TO220F	Single	N	900	9	±30	3	5	48	3.7
AM12N90MF	TO220F	Single	N	900	11.5	±30	3	5	48	0.95

TRENCH & SUPER TRENCH LOW VOLTAGE MOSFET

Part NO	Package	Conf.	Polarity	BVdss [V]	ID [A]	VGS [V]	Vth [V]		PD [W]	Rds(ON) Typ. [mΩ]
							Min.	Max.		
ES6005DS	SOP8	Dual	P+P	-60	-5	±20	-1	-2	35	53
AM3P20	SOT23	Single	P	-20	-2.44	±12	-0.5	-1	1.2	70
AM3N20	SOT23	Single	N	20	2.8	±12	0.6	1.2	1.2	34
AM5N06DS	SOP8	Dual	N+N	60	6.5	±20	1	3	3.7	35
ES4946S	SOP8	Dual	N+N	60	8	±20	1	2	2	27
AM120N085	TO220	Single	N	85	120	±20	2	4	208	4.6
AM120N085D	TO263	Single	N	85	120	±20	2	4	208	6.2
AM90N15	TO220	Single	N	150	90	±20	2.4	3.6	192	10
AM90N15D	TO263	Single	N	150	90	±20	2.4	3.6	192	10
AM140N15	TO220	Single	N	150	140	±25	2	4	320	5.6
AM30N20	TO247	Single	N	200	30	±30	2	4	178	62

HIGH VOLTAGE SUPER JUNCTION MOSFET

Part NO	Package	Conf.	Polarity	BVdss [V]	ID [A]	VGS [V]	Vth [V]		PD [W]	Rds(ON) Typ. [mΩ]
							Min.	Max.		
AM60R570U	TO251S	Single	N	600	7	±30	2	4	60	0.48
AM60R570D	TO252	Single	N	600	7	±30	2	4	60	0.48
AM60R130NW	TO247	Single	N	600	20	±30	2	4	400	0.11
AM60R140NF	TO220F	Single	N	600	25	±30	3	5	34	0.12
AM65R900U	TO251S	Single	N	650	5	±30	2	4	42	0.78
AM65R900D	TO252	Single	N	650	5	±30	2	4	42	0.78
AM65R680F	TO220F	Single	N	650	7	±30	2	4	32.6	0.6
AM65R680D	TO252	Single	N	650	7	±30	2	4	60	0.6
AM65R380F	TO220F	Single	N	650	11	±30	2	4	31	0.33
AM65R260F	TO220F	Single	N	650	15	±30	2	4	32.6	0.22
AM65R190NT	TO220	Single	N	650	20	±30	2	4	60	0.18
AM65R070NW	TO247	Single	N	650	42	±30	2	4	390	0.063
AM65R040NW	TO247	Single	N	650	58	±30	2	4	400	0.038
AM70R180F	TO220F	Single	N	700	15	±30	2	4	33.2	0.26
AM70R260F	TO220F	Single	N	700	21	±30	2	4	33.8	0.17
AM80R320F	TO220F	Single	N	800	17	±30	2	4	35	0.26

Low VF Schottky Diode

Part NO	Package	Die	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [μA] @ Full VR	I _{FSM} [A]
B0520W	SOD123	1	20	0.5	0.39	250	25
B0530W	SOD123	1	30	0.5	0.43	130	25
B0540W	SOD123	1	40	0.5	0.51	20	25
B120W	SOD123	1	20	1	0.52	100	30
B140W	SOD123	1	40	1	0.55	100	30
B240A	SMA	1	40	2	0.55	500	50
SOD240	SOD123F	1	40	2	0.50	500	40
SS14	SMA	1	40	1	0.50	200	40
SS16	SMA	1	60	1	0.75	200	40
SS32A	SMA	1	20	3	0.55	500	80
SS34A	SMA	1	40	3	0.55	500	80
SS36A	SMA	1	60	3	0.70	500	80
SS310A	SMA	1	100	3	0.85	300	80
SS312A	SMA	1	120	3	0.85	300	80
SS315A	SMA	1	150	3	0.95	300	80
SS320A	SMA	1	200	3	0.95	300	80
SS52A	SMA	1	20	5	0.55	500	150
SS54A	SMA	1	40	5	0.55	500	150
SS56A	SMA	1	60	5	0.70	500	150
SS510A	SMA	1	100	5	0.85	100	150
SS512A	SMA	1	120	5	0.85	100	150
SS515A	SMA	1	150	5	0.95	100	150
SS520A	SMA	1	200	5	0.95	100	150
SS34B	SMB	1	40	3	0.55	500	80
SS210	SMA	1	100	1	0.85	500	100
SS310B	SMB	1	100	3	0.85	500	80

Ultra Low VF Schottky Diode

Part NO	Package	Die	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	V _{F, typ} [V] @ 125°C	I _{R, max} [μA] @ Full VR	I _{FSM} [A]
AD360AF	SMAF	1	60	3	0.51	0.40	25	85
AD560AX	DO201AD	1	60	5	0.59	0.50	25	85
AD8U60D	TO252	1	60	8	0.59	0.50	25	100
AD1060D	TO252	1	60	10	0.58	0.47	50	145
AD20U60D	TO252	1	60	20	0.57	0.52	40	100
AD40D60F	TO220F	2	60	40	0.65	0.54	40	280
AD60D60TF	TO247	2	60	60	0.73	0.58	40	400
AD10D100F	TO220F	2	100	10	0.67	0.55	40	170
AD10S100F	TO220F	1	100	10	0.66	0.57	50	225
AD10U100M	TO251	1	100	10	0.65	0.54	60	145
AD10U100D	TO252	1	100	10	0.65	0.54	60	145
AD15U100D	TO252	1	100	15	0.69	0.60	40	145
AD20D100F	TO220F	2	100	20	0.61	0.52	40	200
AD20S100F	TO220F	1	100	20	0.71	0.60	40	200
AD40D100F	TO220F	2	100	40	0.72	0.61	100	250
AD40D100TF	TO247	2	100	40	0.72	0.61	100	250
AD50S100F	TO220F	1	100	50	0.65	0.62	50	260
AD10U150D	TO252	1	150	10	0.80	0.68	40	100
AD10S150F	TO220F	1	150	10	0.80	0.68	40	225
AD20S150F	TO220F	1	150	20	0.93	0.65	40	200
AD40D150F	TO220F	2	150	40	0.94	0.68	40	250
AD3200AF	SMAF	1	200	3	0.80	0.64	20	85
AD5200X	DO201AD	1	200	5	0.79	0.58	100	150
AD10D200F	TO220F	2	200	10	0.82	0.58	40	170
AD10S200F	TO220F	1	200	10	0.80	0.63	40	235
AD15U200D	TO252	1	200	15	0.91	0.58	50	100
AD20D200F	TO220F	2	200	20	0.93	0.65	40	200
AD30D200F	TO220F	2	200	30	0.90	0.69	40	250
AD30D200TF	TO247	2	200	30	0.86	0.65	40	250
AD5U300D	TO252	1	300	5	0.80	0.65	50	150
AD10D300F	TO220F	2	300	10	0.80	0.65	50	170
AD10S300F	TO220F	1	300	10	0.86	0.70	50	200
AD20D300F	TO220F	2	300	20	0.86	0.70	85	200

Schottky Barrier Rectifier

Part NO	Package	Die	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [uA] @ Full VR	I _{FSM} [A]
MBR1040F	TO220F	2	40	10	0.55	500	150
MBR1045F	TO220F	2	50	10	0.55	500	150
MBR1060F	TO220F	2	60	10	0.75	500	150
MBR1080F	TO220F	2	80	10	0.75	100	150
MBR10100F	TO220F	2	100	10	0.85	100	150
MBR10120F	TO220F	2	120	10	0.85	100	150
MBR10150F	TO220F	2	150	10	0.90	100	150
MBR10200F	TO220F	2	200	10	0.95	100	150
MBR2040F	TO220F	2	40	20	0.55	500	150
MBR2045F	TO220F	2	50	20	0.55	500	150
MBR2060F	TO220F	2	60	20	0.75	500	150
MBR2080F	TO220F	2	80	20	0.75	100	150
MBR20100F	TO220F	2	100	20	0.85	100	150
MBR20120F	TO220F	2	120	20	0.85	100	150
MBR20150F	TO220F	2	150	20	0.90	100	150
MBR20200F	TO220F	2	200	20	0.95	100	150
MBR3040F	TO220F	2	40	30	0.55	500	200
MBR3045F	TO220F	2	50	30	0.55	500	200
MBR3060F	TO220F	2	60	30	0.75	500	200
MBR3080F	TO220F	2	80	30	0.75	100	200
MBR30100F	TO220F	2	100	30	0.85	100	200
MBR30120F	TO220F	2	120	30	0.85	100	200
MBR30150F	TO220F	2	150	30	0.90	100	200
MBR30200F	TO220F	2	200	30	0.95	100	200
MBR4040F	TO220F	2	40	40	0.55	500	200
MBR4045F	TO220F	2	50	40	0.55	500	200
MBR4060F	TO220F	2	60	40	0.75	500	200
MBR4080F	TO220F	2	80	40	0.75	100	200
MBR40100F	TO220F	2	100	40	0.85	100	200
MBR40120F	TO220F	2	120	40	0.85	100	200
MBR40150F	TO220F	2	150	40	0.90	100	200
MBR40200F	TO220F	2	200	40	0.95	100	200
MBR6040F	TO220F	2	40	60	0.55	500	350
MBR6045F	TO220F	2	50	60	0.55	500	350
MBR6060F	TO220F	2	60	60	0.75	500	350
MBR6080F	TO220F	2	80	60	0.75	100	350
MBR60100F	TO220F	2	100	60	0.85	100	350
MBR60120F	TO220F	2	120	60	0.85	100	350
MBR60150F	TO220F	2	150	60	0.90	100	350
MBR60200F	TO220F	2	200	60	0.95	100	350
MBRF20300VCT	TO220F	2	300	20	0.92	5	200
MBRF30300VCT	TO220F	2	300	30	0.92	5	250

Ultra Fast Recovery Diode(UFRD)

Part NO	Package	Die	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [uA] @ Full VR	I _{FSM} [A]
MUR440	DO201AD	1	400	4	1.25	5	125
MUR460	DO201AD	1	600	4	1.25	5	125
MURF1020	TO220F-2L	1	200	10	1.0	10	125
MURF1040	TO220F-2L	1	400	10	1.3	10	150
MURF1060	TO220F-2L	1	600	10	1.7	10	150
MURF1620	TO220F-2L	1	200	16	1.3	10	180
MURF1640	TO220F-2L	1	400	16	1.5	10	180
MURF1660	TO220F-2L	1	600	16	2.0	10	180
MUR2005	TO220-2L	1	50	20	0.98	5	200
MUR2010	TO220-2L	1	100	20	0.98	5	200
MUR2015	TO220-2L	1	150	20	0.98	5	200
MUR2020	TO220-2L	1	200	20	0.98	5	200
MUR2030	TO220-2L	1	300	20	1.3	10	200
MUR2040	TO220-2L	1	400	20	1.3	10	200
MUR2060	TO220-2L	1	600	20	1.5	10	200
MUR3020F	TO220F-2L	1	200	30	1.3	10	300
MUR3040F	TO220F-2L	1	400	30	1.4	10	300
MUR3060F	TO220F-2L	1	600	30	1.7	10	300
MUR3020LWD	TO247-3L	2	200	30	1.0	10	300
MUR3040LWD	TO247-3L	2	400	30	1.3	10	300
MUR3060LWD	TO247-3L	2	600	30	1.6	10	300

Fast Switching Diode

Part NO	Package	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [uA] @ Full VR	I _{FSM} [A]
1N4148W	SOD123	100	0.1	1.2	100	2
1N4148WS	SOD323	100	0.1	1.2	100	2
BAT54	SOT23	30	0.2	1	2	0.6
BAT54A/C/S	SOT23	30	0.2	1	2	0.6
BAV19W	SOD123	120	0.25	1.25	0.1	9
BAV20W	SOD123	200	0.25	1.25	0.1	9
BAV21W	SOD123	250	0.25	1.25	0.1	9
BAV19WS	SOD323	120	0.25	1.25	0.1	9
BAV20WS	SOD323	200	0.25	1.25	0.1	9
BAV21WS	SOD323	250	0.25	1.25	0.1	9
BS12W	SOD123	20	1	0.55	300	25
BS14W	SOD123	40	1	0.55	300	25
BS16W	SOD123	60	1	0.70	300	25
BS18W	SOD123	80	1	0.70	300	25
BS110W	SOD123	100	1	0.85	200	25
BS112W	SOD123	120	1	0.85	200	25
BS115W	SOD123	150	1	0.90	100	25
BS120W	SOD123	200	1	0.90	100	25

Bridge Rectifier

Part NO	Package	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [uA] @ Full VR	I _{FSM} [A]	Note
ABS10	ABS	1000	1	1	5	35	
ABS210	ABS	1000	2	1	5	50	
EABS16	ABS	600	1	1.7	5	60	TRR 35nS
EABS26	ABS	600	2	1.7	5	60	TRR 35nS
MB6S	MBS	600	0.5	1	5	30	
DF06S	DFS	600	1	1.1	5	50	
DF201S	DFS	50	2	1.1	10	60	
DF210S	DFS	1000	2	1.1	10	60	
DB101S	DBS	50	1	1.1	10	45	
DB102S	DBS	100	1	1.1	10	45	
DB103S	DBS	200	1	1.1	10	45	
DB104S	DBS	400	1	1.1	10	45	
DB105S	DBS	600	1	1.1	10	45	
DB106S	DBS	800	1	1.1	10	45	
DB107S	DBS	1000	1	1.1	10	45	
GBJ10005	GBJ	50	10	1.1	5	200	
GBJ1001	GBJ	100	10	1.1	5	200	
GBJ1002	GBJ	200	10	1.1	5	200	
GBJ1004	GBJ	400	10	1.1	5	200	
GBJ1006	GBJ	600	10	1.1	5	200	
GBJ1008	GBJ	800	10	1.1	5	200	
GBJ1010	GBJ	1000	10	1.1	5	200	
KBJ2J	KBJ	600	2	1	10	50	
KBP2005G	KBP	50	2	1.1	5	60	
KBP210G	KBP	100	2	1.1	5	60	
KBP202G	KBP	200	2	1.1	5	60	
KBP204G	KBP	400	2	1.1	5	60	
KBP206G	KBP	600	2	1.1	5	60	
KBP208G	KBP	800	2	1.1	5	60	
KBP210G	KBP	1000	2	1.1	5	60	

General Rectifier

Part NO	Package	V _R [V]	I _D [A]	V _{F, max} [V] @ 25°C	I _{R, max} [uA] @ Full VR	I _{FSM} [A]
SF26	DO15	400	2	1.3	5	60
S1JB	SMA	600	1	1.1	5	30
SF58G	DO201AD	600	5	1.7	5	150
SF68G	DO201AD	600	6	1.7	5	180
S3AC	SMC	50	3	1.0	5	100
S3BC	SMC	100	3	1.0	5	100
S3DC	SMC	200	3	1.0	5	100
S3GC	SMC	400	3	1.0	5	100
S3JC	SMC	600	3	1.0	5	100
S3KC	SMC	800	3	1.0	5	100
S3MC	SMC	1000	3	1.0	5	100
6A05S	DO201AD	50	6	1.1	10	250
6A1S	DO201AD	100	6	1.1	10	250
6A2S	DO201AD	200	6	1.1	10	250
6A4S	DO201AD	400	6	1.1	10	250
6A6S	DO201AD	600	6	1.1	10	250
6A8S	DO201AD	800	6	1.1	10	250
6A10S	DO201AD	1000	6	1.1	10	250
1N4007	DO41	1000	1	1.1	5	30
UF4001G	DO41	50	1	1.0	5	30
UF4002G	DO41	100	1	1.0	5	30
UF4003G	DO41	200	1	1.0	5	30
UF4004G	DO41	400	1	1.3	5	30
UF4005G	DO41	600	1	1.45	5	30
UF4006G	DO41	800	1	1.45	5	30
UF4007G	DO41	1000	1	1.45	5	30
A7	SOD123F	1000	1	1.1	5	30
M7	SMA	1000	1	1.1	5	30
S1M	SMA	1000	1	1.1	5	30
S2MA	SMA	1000	1.5	1.15	5	50
S2M	SMB	1000	1.5	1.15	5	50
S2MA	SMA	1000	1.5	1.1	5	60
S1J	SMA	600	1	1.1	5	40
US1D	SMA	400	1	1.0	5	30
US1J	SMA	600	1	1.65	5	30
U1M	SOD123F	1000	1	1.7	5	30
US1M	SMA	1000	1	1.7	5	30
US1MF	SMAF	1000	1	1.7	5	30
FR207	DO15	1000	2	1.3	5	60
RL207	DO15	1000	2	1.1	5	60
ES1D	SMA	200	1	0.95	5	30
ES1J	SMA	600	1	1.7	5	30
ES1JF	SMAF	600	1	1.7	10	30
ES2JA	SMA	600	2	1.7	5	50
ES2J	SMB	600	2	1.7	5	50
ES2JF	SMAF	600	2	1.7	5	65
ES3J	SMC	600	2	1.7	5	50

* ES series : TRR 35nS

Motor Driver

Driver Type	Part No	V _{IN} [V]	I _{OUT} [A]	Channel	I _{q, typ} [mA]	Function and Feature	Package
Stepper/ DC Motor Driver	AP8101	17	0.4	2	3.5 (VCC)	- Optimized for Refrigerator Actuators, Printers and Robotics - Stand-by operation - Short-Through Current Restriction Circuit - Over Current Shutdown Circuit - Thermal Shutdown Circuit - Under Voltage Lockout Circuit	DIP16 SOP-16(W)
	AP8200	17	0.4	4	4.5 (VCC)	- Optimized for Refrigerator Actuators, Printers and Robotics - Stand-by operation - Short-Through Current Restriction Circuit - Over Current Limit Circuit - Thermal Shutdown Circuit - Under Voltage Lockout Circuit	eTSSOP20
	AP8110	17	0.4	2	5	- Optimized for Full step motor drive in 12V system products - The compact package(SSOP10) is adopted - For one power supply (The control system power supply is unnecessary) - Very low Current consumption with stand-by mode - TTL Compatible Inputs - Over Current Limit Circuit - Thermal Shutdown Circuit - Under Voltage Lockout Circuit	SSOP10
	AP8300L	20	1	2	2	- Dual H-Bridge Motor Driver (Step Motor/Brush DC) - PWM Control Interface - High Output Current per H-Bridge (Max. 1A at TA=25°C) - Parallel Mode Available Capable of 2A Maximum Driver Current at 12V - Optional Current Regulator 4 to 18V operating Supply Voltage Range - Low Current 3uA Sleep Mode - VM Under Voltage Lockout (UVLO) - Overcurrent Protection (OCP) - Thermal Shutdown Circuit (TSD) - Fault Condition Indication Pin (nFAULT)	eTSSOP16
	AP8300S	20	2	2	2	- Dual H-Bridge Motor Driver (Step Motor/Brush DC) - PWM Control Interface - High Output Current per H-Bridge (Max. 2A at TA=25°C) - Parallel Mode Available Capable of 4A Maximum Driver Current at 12V - Optional Current Regulator 4 to 18V operating Supply Voltage Range - Low Current 3uA Sleep Mode - VM Under Voltage Lockout (UVLO) - Overcurrent Protection (OCP) - Thermal Shutdown Circuit (TSD) - Fault Condition Indication Pin (nFAULT)	eTSSOP16
3Phase BLDC Motor Driver	AP8400	28	3	3	8.5	- Sensorless Phase BLDC Motor Driver - PWM Control Interface - High Output Current up to 2A (Peak Max. 3A at TA=25°C) - Half Bridge 3 Channels - Sensorless Sinusoidal 180 Commutation Scheme - Initial Position-Detect Algorithm to Avoid Back Spin During Start Up 6.2 to 28V operating Supply Voltage Range - Flexible User Interface Options (I2C Interface: Access Registers for Command and Feedback) - VM Undervoltage Lockout (UVLO) - Over voltage and Overcurrent Protection (OVP/OCP) - Thermal Shutdown Circuit (TSD) - Anti-Voltage Surge Protection	eTSSOP24

LDO & REGULATOR

Part NO	Package	Maximum Rating			Vout Range [V]	Line Regulation			Line Regulation			Vdrop [V]
		Vi	Io	Pd		Max [%]	@ Vi [V]		Max [%]	@ Io [mA]		
		[V]	[A]	[W]			Min	Max		Min	Max	Max
ISP278R05FTL	TO220F-4L	18	1.5	1.5	5.0	2.5	6.0	12.0	2.0	5	2000	0.5
ISP278R12FTL	TO220F-5L	35	1.5	1.5	12.0	2.5	13.0	29.0	2.0	5	2000	0.5
LM1117S-ADJ	SOT223	16	1	14	ADJ	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117S-1.2	SOT223	16	1	14	1.2	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117S-1.5	SOT223	16	1	14	1.5	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117S-1.8	SOT223	16	1	14	1.8	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117S-3.3	SOT223	16	1	14	3.3	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117S-5.0	SOT223	16	1	14	5.0	0.2	Vin + 1.6V	Vin + 8V	0.5	3	1000	1.25
LM1117Q-33	SOT89	16	1	0.5	3.3	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM1117Q-50	SOT89	16	1	0.5	5.0	0.2	Vin + 1.5V	Vin + 7V	0.5	3	1000	1.25
LM317RTRL	TO252	40	1.5	Limited	1.2 - 37	0.04	Vin + 3V	Vin + 40V	0.5	10	1500	2.5
LM78L05S	SOP8	35	0.15	625	5.0	250	Vin + 2V	Vin + 15V	60	1	150	1.7
LM78L05Q	SOT89	35	0.15	625	5.0	250	Vin + 2V	Vin + 15V	60	1	150	1.7
LM78L08Q	SOT89	35	0.15	625	8.0	250	Vin + 2V	Vin + 15V	60	1	150	1.7
LM78L12Q	SOT89	35	0.15	625	12.0	250	Vin + 2V	Vin + 15V	60	1	150	1.7
LM78L15Q	SOT89	35	0.15	625	15.0	250	Vin + 2V	Vin + 15V	60	1	150	1.7
LM7805F	TO220F	35	1	14	5.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7806F	TO220F	35	1	14	6.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7808F	TO220F	35	1	14	8.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7809F	TO220F	35	1	14	9.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7812F	TO220F	35	1	14	12.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7815F	TO220F	35	1	14	15.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7805R	TO252(DPAK)	35	1	1	5.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7806R	TO252(DPAK)	35	1	1	6.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7808R	TO252(DPAK)	35	1	1	8.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7809R	TO252(DPAK)	35	1	1	9.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7810R	TO252(DPAK)	35	1	1	10.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7812R	TO252(DPAK)	35	1	1	12.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7815R	TO252(DPAK)	35	1	1	15.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7812D	TO262(D2PAK)	35	1	1.6	12.0	240	Vin + 2V	Vin + 12V	240	5	1500	2
LM7905F	TO220F	-35	1	14	-5.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7906F	TO220F	-35	1	14	-6.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7909F	TO220F	-35	1	14	-9.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7912F	TO220F	-35	1	14	-12.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7915F	TO220F	-35	1	14	-15.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7905R	TO252(DPAK)	-35	1	1	-5.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7908R	TO252(DPAK)	-35	1	1	-8.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7912R	TO252(DPAK)	-35	1	1	-12.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3
LM7912T	TO220	-35	1	2	-12.0	240	Vin - 2.5V	Vin - 12.5V	240	-5	-1500	1.3

LED Driver

Type	Built-in	Part No	V _{IN} [V]	V _{OUT, max} [V]	I _{OUT} [A]	I _{Q, typ} [mA]	Function and Feature	Package
Linear	O	ISP7000	25	25	0.15	2	- Dimming control or sleep mode by MiCOM signal up to 10kHz - Supply the stable bias current for LEDs - Simple circuit design and very low cost design	SOT25
	O	AP7350	25	25	1	18	- Dimming Control or Sleep mode by MiCOM signal - Flicker-Free Device & Provide Low IQ @ ON status - Simple Circuit Design and Very low cost design	SOT89-5L SOP8
DC-DC	O	G8630A	30	600	-	-	- Low startup current - High PFC & Accuracy - Integrated 600V MOSFET	DIP8
	X	G8510	18	-	0.5	1	- Single Stage Buck PFC controller - Short LED and Open LED protection - Provide Low startup current : 12uA	SOT26

OPAMP & COMPARATOR

Type	Part No	V _{IN} [V]	V _{IOS} [mV]	I _{Q, typ} [mA]	Function and Feature	Package
Dual OPAMP	AP358S	36	±2	0.7	- Large DC voltage gain : 100dB - Wide Bandwidth for unity gain : 1 MHz - Very low power consumption	SOP8
Dual voltage Comporator	AP393S	36	±2	0.7	- Wide voltage operation 2V to 36V - Low current Drain 0.8mA - Low input offset current & offset voltage	SOP8

IPM

Product Name	Polarity	Package	V _{(BR)DSS}	I _D	P _D	V _{GS}	V _{GS(th)}	R _{DS(on)} (mΩ) @VGS=10V, 25°C	
			(V)	(A)	(W)	(V)	(V)	10V	
			25°C	25°C	25°C	25°C	Typ	Typ	Max
MPVM03N60(MOSFET)	IPM(N)	DIP23H SOP23H	600	3A*2*3	14/DIE	20	15.0	3	3.4
MPVM07N60(MOSFET)	IPM(N)	DIP23H SOP23H	600	7A*2*3	14/DIE	20	15.0	1	1.3
MPBM15N60BTB(IGBT)	IPM	DIP24H	600	15A*2*3	35/DIE	20	15.0	1.4	1.8
MPBM30N60BTB(IGBT)	IPM	DIP24H	600	30A*2*3	83/DIE	20	15.0	1.4	1.8

Triac

Part NO	Package	V_R [V]	I_T [A]	$I_{T, \max}$ [V] @ 25°C	$I_{R, \max}$ [mA] @ Full V_R	I_{TSM} [A]
BCR5AS-8D	TO252	400	5	1.8	2	50
BCR5AS-12D	TO252	600	5	1.8	2	50
BCR6CM-8T	TO220C	400	6	1.7	2	60
BCR6CM-12T	TO220C	600	6	1.7	2	60
BCR8CM-8T	TO220C	400	8	1.5	2	80
BCR8CM-12T	TO220C	600	8	1.5	2	80
BCR16CM-8T	TO220C	400	16	1.5	2	170
BCR16CM-12T	TO220C	600	16	1.5	2	170
TYN620	TO220C	600	20	1.6	0.01	200
TYN620F	TO220F	600	20	1.6	0.01	200

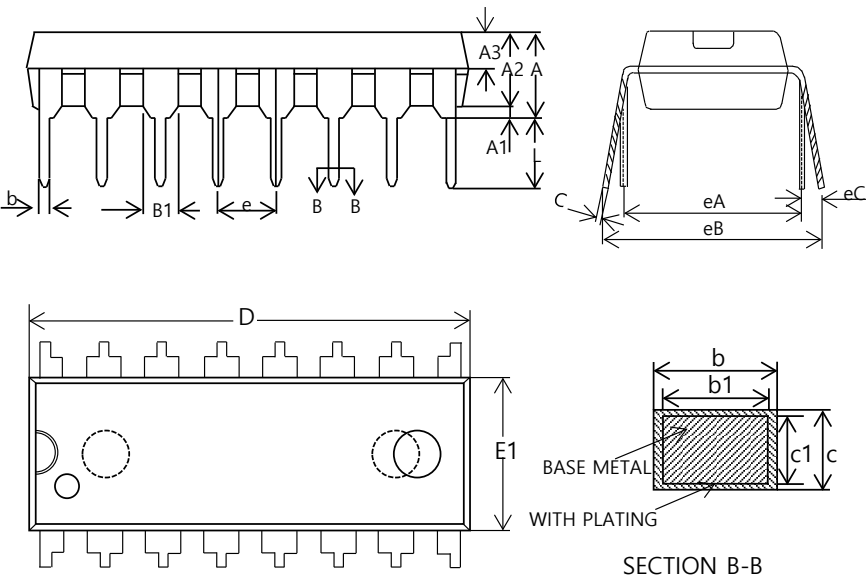
SCR

Part NO	Package	V_R [V]	I_T [A]	$I_{T, \max}$ [V] @ 25°C	$I_{R, \max}$ [mA] @ Full V_R	I_{TSM} [A]
CR3AM-12A	TO92	600	0.3	1.8	0.1	20
CR3AM-16A	TO92	800	0.3	1.8	0.1	20
CR08AS-8Q	SOT89	400	0.8	1.8	0.1	10
CR08AS-12Q	SOT89	600	0.8	1.8	0.1	10
CR12CS-16V	TO262	800	12	1.6	2	220

Photo Coupler

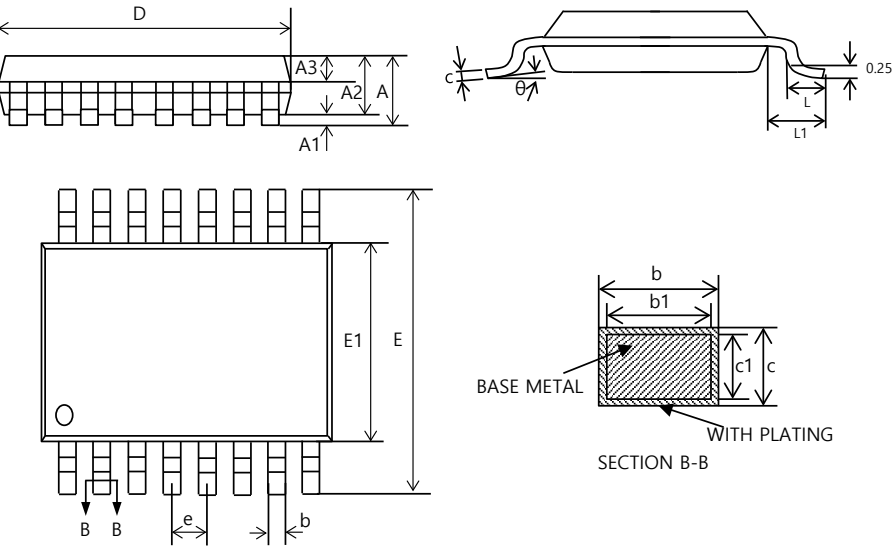
Part NO	Package	V_R [V]	I_C [A]	$V_{F, \max}$ [V] @ 25°C	$I_{R, \max}$ [mA] @ Full V_R	I_{FP} [A]
AL816	DIP4	6	0.05	1.4	0.01	1
AL816M	DIP4M	6	0.05	1.4	0.01	1
AL816S	SOP4	6	0.05	1.4	0.01	1
AL817	DIP4	6	0.05	1.4	0.01	1
AL817M	DIP4M	6	0.05	1.4	0.01	1
AL817S	SOP4	6	0.05	1.4	0.01	1

Package Dimension



* unit : mm

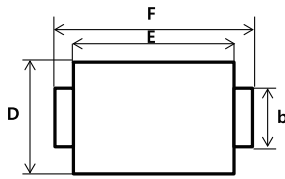
DIP-16L			
DIM	MIN	NOM	MAX
A	3.60	3.80	4.00
A1	0.51	-	-
A2	3.20	3.30	3.40
A3	1.47	1.52	1.57
b	0.44	-	0.52
b1	0.43	0.46	0.49
B1	1.52BSC		
c	0.25	-	0.29
c1	0.24	0.25	0.26
D	18.90	19.10	19.20
E1	0	-	7
e	2.54BSC		
eA	7.62BSC		
eB	7.62	-	9.30
eC	0	-	0.84
L	3.00	-	-



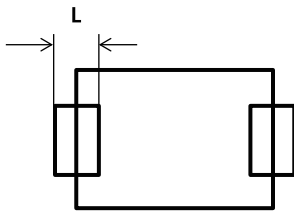
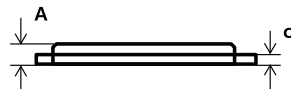
* unit : mm

SOPW-16L			
DIM	MIN	NOM	MAX
A	-	-	2.65
A1	0.10	-	0.30
A2	2.25	2.30	2.35
A3	0.97	1.02	1.07
b	0.35	-	0.43
b1	0.34	0.37	0.40
c	0.25	-	0.29
c1	0.24	0.25	0.26
D	10.20	10.30	10.40
E1	10.10	10.30	10.50
e	1.27BSC		
L	0.55	-	0.85
L1	1.40REF		
θ	0	-	8°

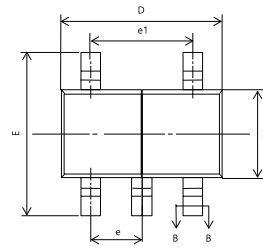
* unit : mm



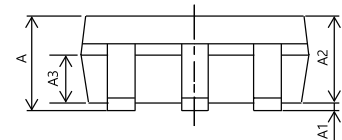
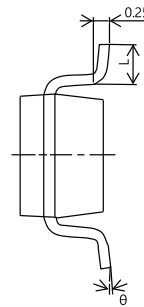
SMAF			
DIM	MIN	MAX	TYP
A	0.90	1.10	1.00
b	1.30	1.70	1.50
c	0.10	0.30	0.20
D	2.30	2.90	2.60
E	3.60	4.30	3.95
F	4.80	5.30	5.05
L	0.80	1.30	1.05



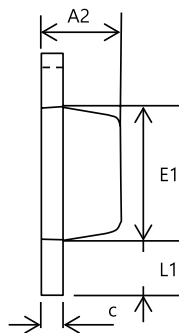
* unit : mm



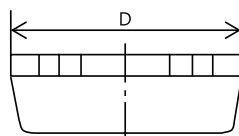
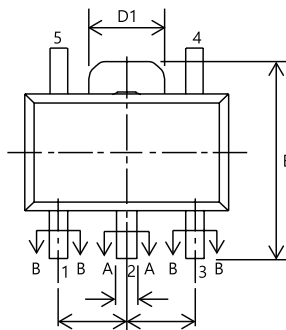
SOT-23-5L			
DIM	MIN	NOM	MAX
A	-	-	1.35
A1	0.04	-	0.15
A2	1.00	1.10	1.20
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	-	0.60
Θ	0	-	8°
L/F	47*47	46*64	



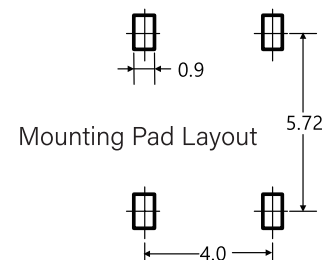
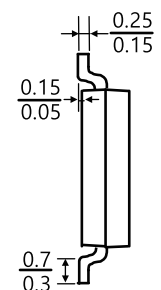
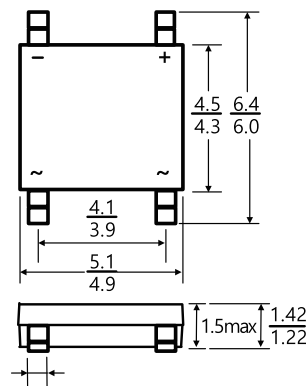
* unit : mm



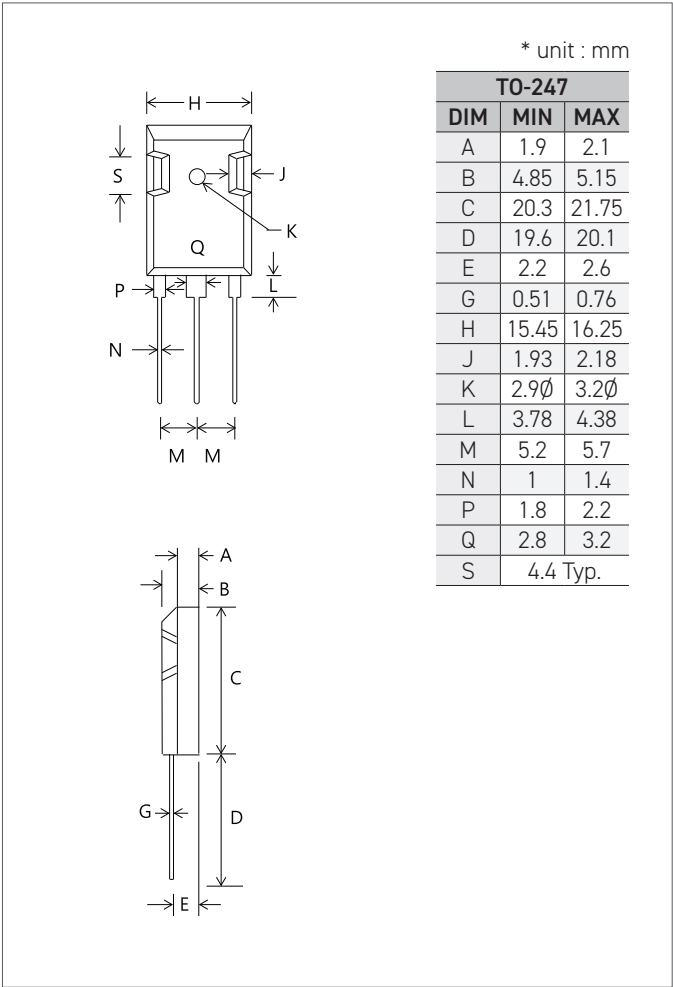
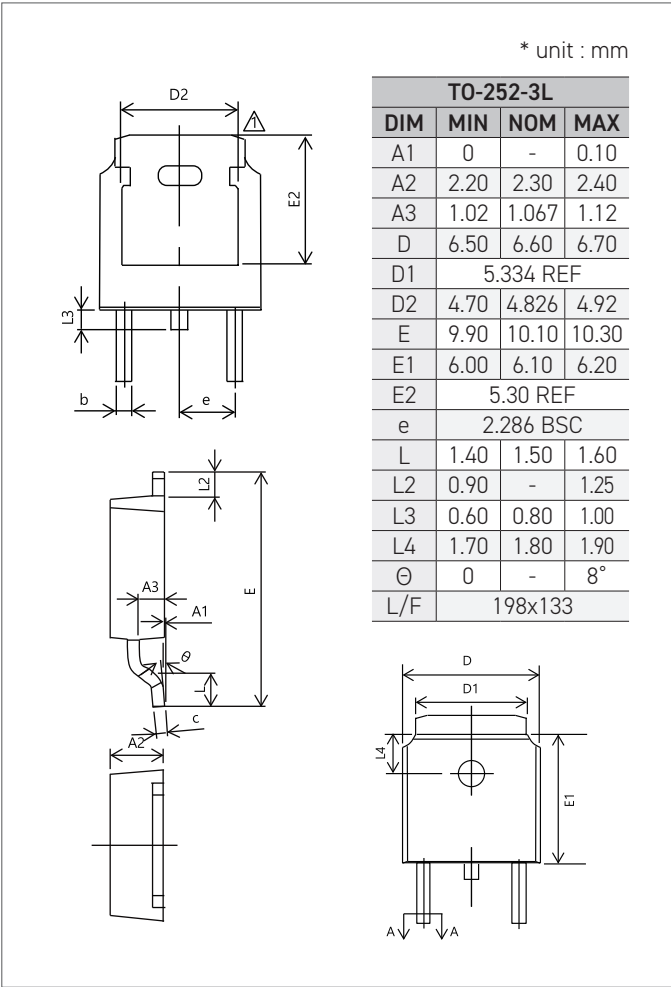
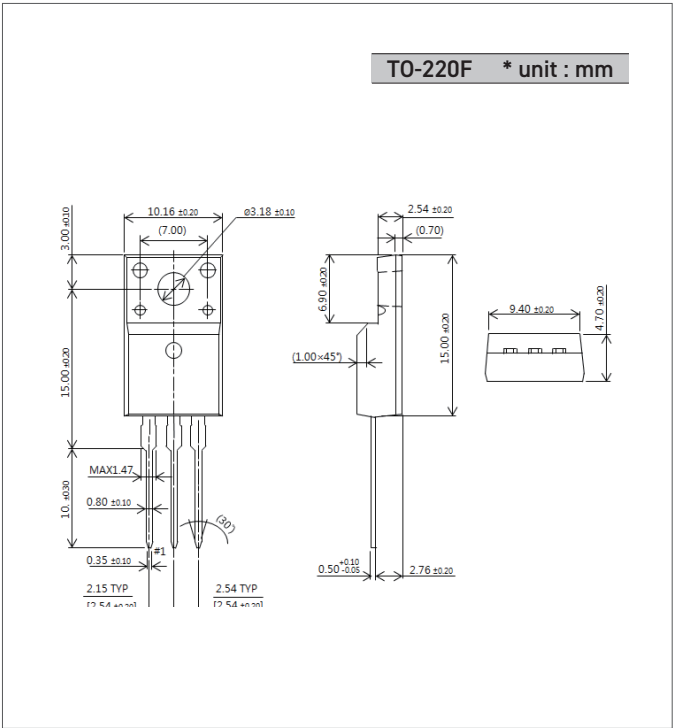
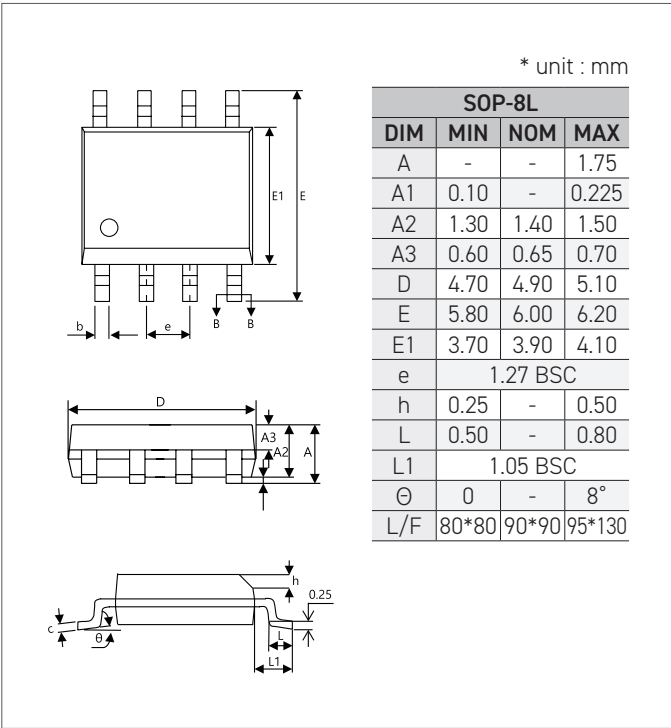
SOT-89-5L			
DIM	MIN	NON	MAX
A2	1.40	1.50	1.60
D	4.30	4.50	4.70
D1	1.70 REF		
E	4.00	4.20	4.40
E1	2.30	2.50	2.70
e	1.50 BSC		
L1	0.80	1.00	1.20



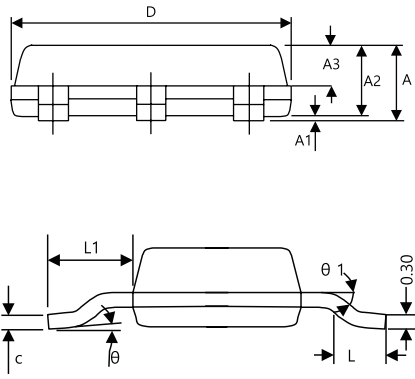
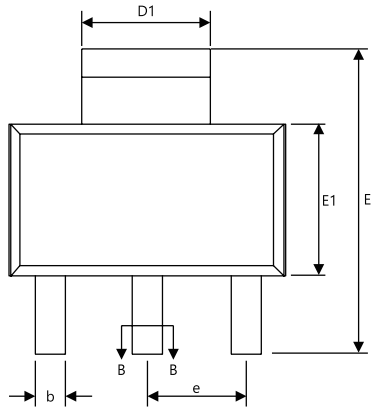
ABS * unit : mm



Package Dimension

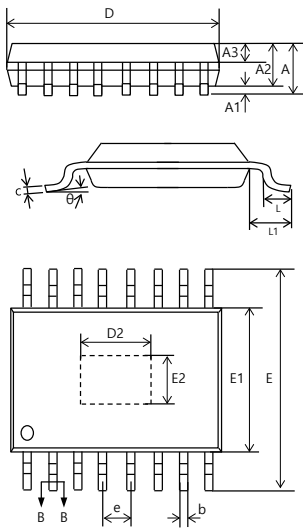


* unit : mm

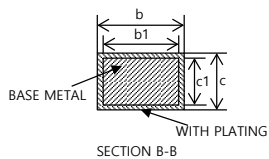


SOT-223-3L			
DIM	MIN	NOM	MAX
A	1.50	1.65	1.80
A1	0.03	0.06	0.09
A2	1.45	1.60	2.75
A3	0.80	0.90	1.00
D	4.3	4.5	4.7
D1	3.00 REF		
E	6.80	7.00	7.20
E1	3.40	3.50	3.60
e	2.30 BSC		
	0.90	-	-
L1	1.75 BSC		
	0	-	7
	37.50 REF		

* unit : mm

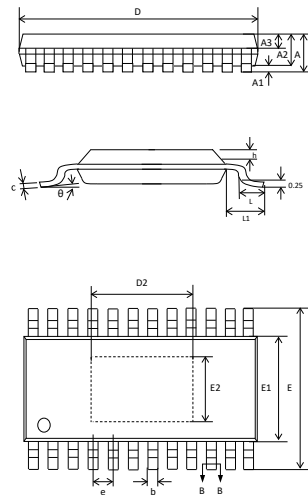


eTSSOP-16L			
DIM	MIN	NOM	MAX
A	-	-	1.20
A1	0.05	-	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	-	0.28
b1	0.19	0.22	0.25
c	0.13	-	0.17
c1	0.12	0.13	0.14
D	4.90	5.00	5.10
E1	6.20	6.40	6.60
e	0.65BSC		
L	0.45	-	0.75
L1	1.00BSC		
Theta	0	-	8°

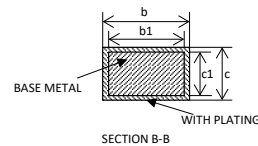


L/F (mil)	D2	E2
91*118	2.80 REF	2.10 REF

* unit : mm



eTSSOP-24L			
DIM	MIN	NOM	MAX
A	-	-	1.20
A1	0.05	-	0.15
A2	0.80	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	-	0.29
b1	0.19	0.22	0.25
c	0.13	-	0.18
c1	0.12	0.13	0.14
D	7.70	7.80	7.90
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65 BSC		
L	0.45	0.60	0.75
L1	1.00 BSC		
Theta	0	-	8°



L/F (mil)	D2	E2
118*165	3.95-4.15	2.75-2.95
122*190	4.73-4.93	2.75-2.95

Discrete Cross Reference

ITEM	Part No.	Package	Maker	Part No.
DIODE	AD360	SMAF	Vishay	VSSAF5M6
	AD560	DO201	Vishay	VSSAF5M6
	AD10U100	TO252(DPAK)	Vishay	V10WM100-M3
	AD10D100	TO220F	STM	MBR10100-M3/4W
	AD10D200	TO220F	Vishay	VT10202C-M3/4W
	AD10S100	TO220F	DIODES	SDT10A100CT
	AD10S200	TO220F	Taiwan Semi	MBRF10200DHC0
	AD15U200	TO252(DPAK)	Taiwan Semi	MBRS15200CT-Y RNG
	AD15S200	TO220F	Taiwan Semi	MBR15200CT C0
	AD20D100	TO220F	Vishay	VF20100S-E3/4W
	AD20D200	TO220F	ONSEMI	MBR20200CTG
	AD20S100	TO220F	STM	STPS20M100ST
	AD20S150	TO220F	STM	STPS20150CFP
	AD2060T	TO277	ONSEMI	FSV2060L
	AD30D200F	TO220F	Vishay	VI30202C-M3/4W
	AD30D200TF	TO247	IXYS	DSSK60-02A
	AD40D60	TO220F	STM	STPS40M60CT
	AD40D100	TO220F / TO247	Vishay	VS-40CPQ100PBF
	AD40D150	TO220F	STM	STPS40L15CT
	AD60D60	TO220F / TO247	IXYS	DSA60C60HB
MOSFET	AM3P20	SOT23	ONSEMI	NTR3A052PZ
	AM3N20	SOT23	ONSEMI	NTR3C21NZ
	AM80N04D	TO252(DPAK)	ONSEMI	FDB8441
	AM40P05D	TO252(DPAK)	IXYS	IXTA32P05T
	AM5N06DS	SOP-8	ONSEMI	NTR3C21NZ
	AM45N06D	TO252(DPAK)	DIODES	DMN4040SK3-13
	AM70N08D	TO252(DPAK)	Infineon	IPB097N08N3 G
	AM80N08D	TO252(DPAK)	Infineon	IPB067N08N3 G
	AM6N40RD	TO252(DPAK)	AUK	SUN730D
	AM12N60F	TO220F	AUK	SMK1260F
	AM7N65RF	TO252(DPAK)	AUK	SRN0765F
	AM7N65RD	TO220F	STM	STB8N65M5
	AM10N65RF	TO220F	AUK	SMK0965F
	AM10N65RD	TO252(DPAK)	STM	STD13N65M2
	AM12N65RF	TO220F	AUK	SMK1265F
	AM7N80MF	TO220F	UTC	6N80
	AM10N80MF	TO220F	ONSEMI	FCP650N80Z
	AM10N90MF	TO220F	ONSEMI	FCP650N90Z
	AM60R570U	TO251S	STM	STU10N60M2
	AM60R570D	TO252	STM	STD10N60M2
	AM60R130NW	TO247	STM	STW32N60M2
	AM65R900U	TO251S	STM	STU9N65M2
	AM65R680F	TO220F	STM	STF11N65M2
	AM65R680D	TO252	STM	STD11N65M2
	AM65R380F	TO220F	STM	STF16N65M2
	AM65R260F	TO220F	STM	STF20N65M2
	AM65R190NT	TO220	STM	STP24N60M2
	AM65R070NW	TO247	STM	STWA48N60M2
	AM65R040NW	TO247	STM	STWA56N60M2
	AM70R260F	TO220F	STM	STU2N70M2
	AM70R180F	TO220F	STM	STU1N70M2
	AM80R320F	TO220F	STM	STU3N80M2

IC Cross Reference * X = Any number

ITEM	Part No.	Package	Maker	Part No.	Maker	Part No.
Regulator	LM78LXXQ	SOT-89	KEC	KIA78L00S	Onsemi	MC78L00ACC
	LM78XXR	D-PAK	KEC	KIA7800AF	Onsemi	MC7800BDTG
	LM78XXF	TO-220F	KEC	KIA7800API	Onsemi	MC7800ABTG
	LM79XXF	TO-220F	KEC	KIA7900PI	TAITRON	LM7905F93TU
	LM317R	D-PAK	National Semi	LM317AMDT	TI	LM317MDT
LDO	ISP278R05	TO220F-4L	KEC	KIA278R05	Onsemi	KA278R05
	ISP278R12	TO220F-4L	KEC	KIA278R12	Onsemi	KA278R12
	LM1117Q-XX	SOT-89	LINEAR TECH	LT1117	TI	LM1117IMPX-00
	LM1117S-XX	SOT-223	Onsemi	NCP1117ST00	TI	LM1117IMPX-00
	LM1117R-XX	D-PAK	Onsemi	NCP1117DT00	TI	LM1117DTX-00
LED Driver	ISP7000	SOT-25	AUK	S8200		
	AP7350Q	SOT89-5	AUK	S8350D		
	AP7350S	SOP-8	AUK	S8350S		
	G8510	SOT-26				
	G8630A	SOT-26				
OP-AMP	AP358	SOP-8	TI	LM358		
COMPORATOR	AP393	SOP-8	TI	LM393		
MOTOR Driver	AP8101	DIP-16	Toshiba	TB6674		
	AP8101W	SOPW-16				
	AP8110	SOP-8	ON SEMI	LV8549		
	AP8200	ETSSOP-24				
	AP8300L	ETSSOP-16	TI	DRV8848L		
	AP8300S	ETSSOP-16	TI	DRV8848PWPR		
	AP8400	ETSSOP-24	TI	DRV10987		



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