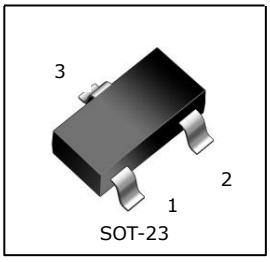
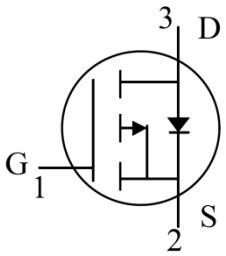
20V P-Channel Enhancement-Mode MOSFET

Features

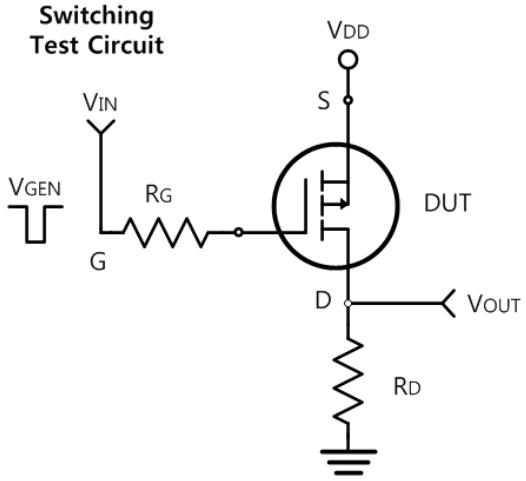
- Low on-resistance
- Max. $R_{DS(ON)}$ (V_{GS}=-4.5V, I_{DS}=-2.8A) = 100mΩ
- Max. $R_{DS(ON)}$ (V_{GS}=-2.5V, I_{DS}=-2.0A) = 150mΩ
- Max. $R_{DS(ON)}$ (V_{GS}=-1.8V, I_{DS}=-2.0A) = 170mΩ
- High Density Cell Design For Ultra Low On-Resistance
- Advanced trench process technology
- General Application



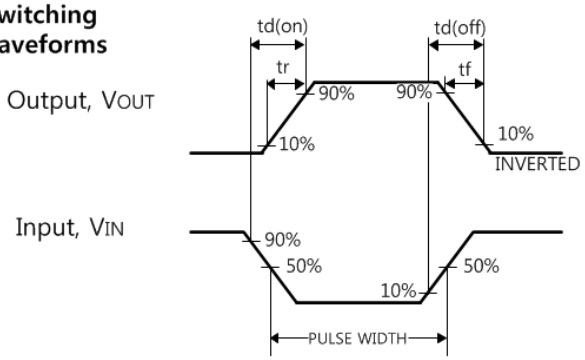


Typical Application

Switching Test Circuit



Switching Waveforms



Maximum Ratings (T_A=25 °C, unless otherwise noted)

Rating		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current		I_D	-2.44	A
Pulsed Drain Current (Note 1)		I_{DM}	-9.27	A
Maximum Power Dissipation	TC = 25℃	P_D	1.25	W
	TA = 75℃		0.8	W
Operating Junction and Storage Temperature Range		$T_{J,TSTG}$	-55 to 150	℃
Junction-to-Ambient Thermal Resistance (PCB Mounted) (Note 2)		$R_{\theta JA}$	140	℃/W

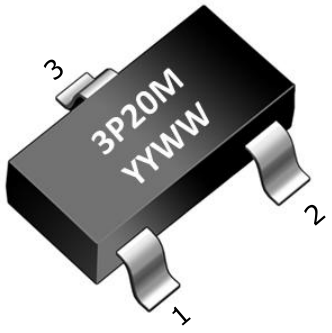
Note:

1. Fused current that based on wire numbers and diameter
2. Repetitive Rating: Pulse width limited by the maximum junction temperature
3. 1-in2 2oz Cu PCB board

Ordering information

Device	Package	Packing	Finish	Halogen	Packing Unit
AM3P20	SOT-23	Reel&Tape	Sn	Free	3,000 ea

Pin Configuration



SOT-23

PIN INFO. 1. Gate 2. Source 3. Drain

Electrical Characteristic (T_C=25 ℃, unless otherwise noted)

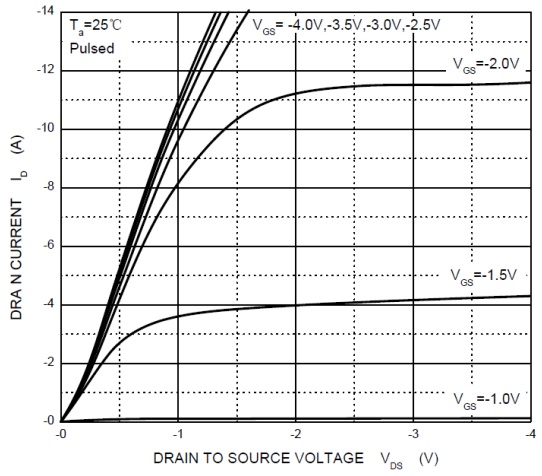
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250 μA	-20	-	–	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -2.8A		70	100.0	mΩ
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = -2.5V, I_D = -2.0A		85.1	150.0	mΩ
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = -1.8V, I_D = -2.0A		111.0	170.0	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-0.5	-0.6	-1	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate Body Leakage	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±100	nA
Dynamic 1)						
Total Gate Charge	$Q_{g(4.5V)}$	V_{DS} = -6V, I_D = -2.8A V_{GS} = -4.5V & -10V		6.07		nC
Total Gate Charge	$Q_{g(10V)}$			11.23		
Gate-Source Charge	Q_{gs}			1.69		
Gate-Drain Charge	Q_{gd}			1.18		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -6V, R_L = 6Ω I_D = -1A, V_{GEN} = -4.5V R_G = 6 Ω		12.49		ns
Turn-On Rise Time	t_r			6.62		
Turn-Off Delay Time	$t_{d(off)}$			112.98		
Turn-Off Fall Time	t_f			46.59		
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V f = 200kHz		561.40		pF
Output Capacitance	C_{oss}			61.43		
Reverse Transfer Capacitance	C_{rss}			52.48		
Source-Drain Diode						
Max. Diode Forward Current	I_S					A
Diode Forward Voltage	V_{SD}	I_S = -1.6A, V_{GS} = 0V				V

Note: Pulse test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

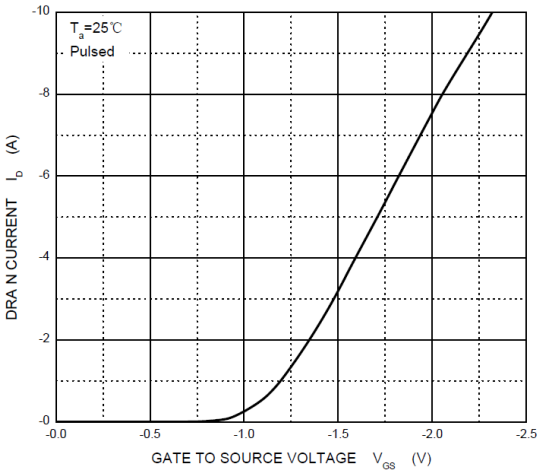
1) Guaranteed by design; not subject to production testing

Typical Performance Characteristics

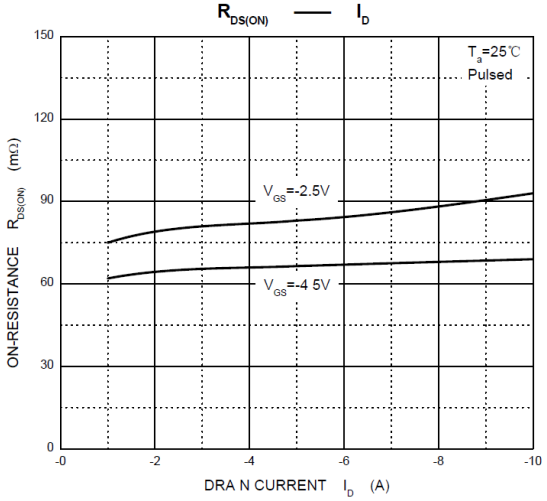
Output Characteristics



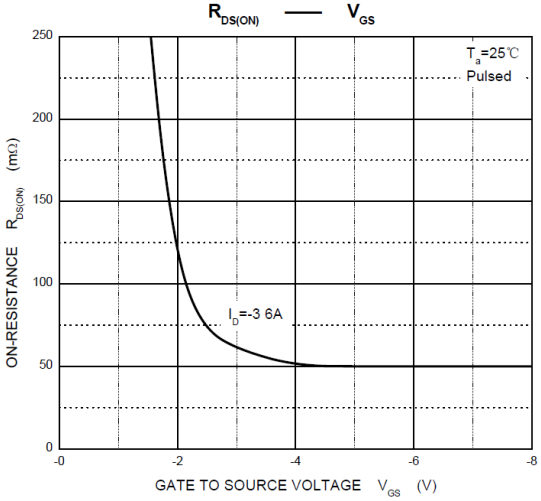
Transfer Characteristics



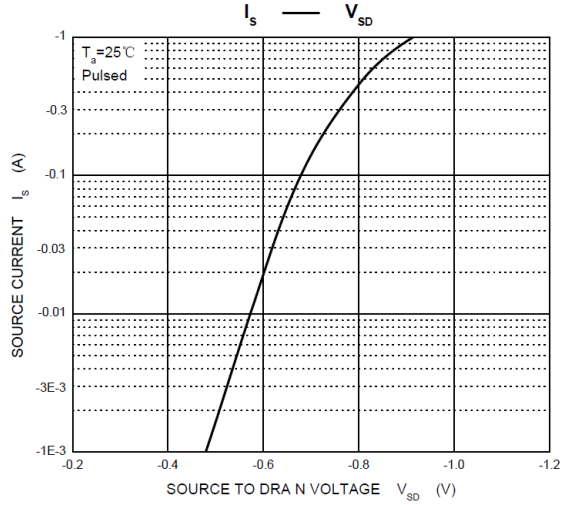
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



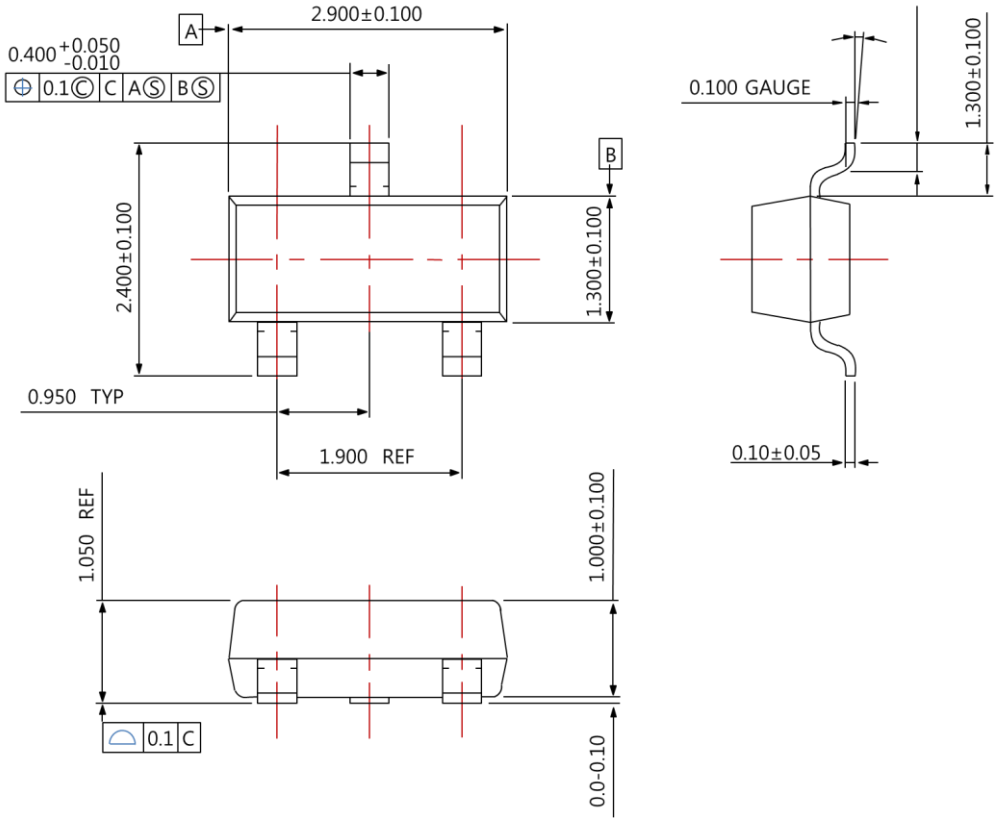
I_S — V_{SD}



Package Dimensions

SOT –23

Unit : mm



Revision History

No	Date	Contents
0	2015-08-30	Initial Brief Datasheet Release

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AP Semiconductor Co., Ltd

Contact. Tel 82.70.4693.2299 FAX 82.70.4000.4009

E-mail: sales@apsemi.com