

Analog Power AM20P02-60D MOSFET Datasheet

<http://www.manuallib.com/analog-power/am20p02-60d-mosfet-datasheet.html>

Key Features:

Low $r_{DS(on)}$ trench technology

Low thermal impedance

Fast switching speed

Typical Applications:

White LED boost converters

Automotive Systems

Industrial DC/DC Conversion Circuits

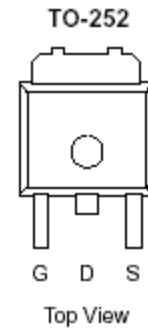
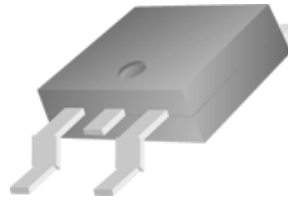
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P-Channel 20-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature TO-252 Surface Mount Package Saves Board Space
- High power and current handling capability
- Extended VGS range (± 25) for battery pack applications



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-20	59 @ $V_{GS} = -4.5V$	24
	95 @ $V_{GS} = -2.5V$	19

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	24	A
Pulsed Drain Current ^b		I_{DM}	± 40	
Continuous Source Current (Diode Conduction) ^a		I_S	-30	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	50	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

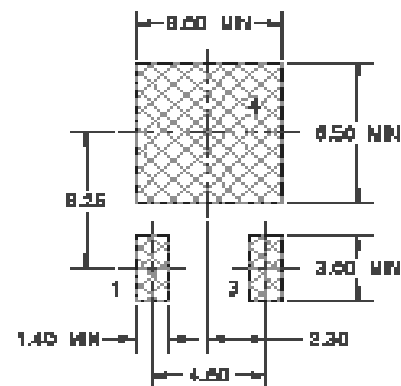
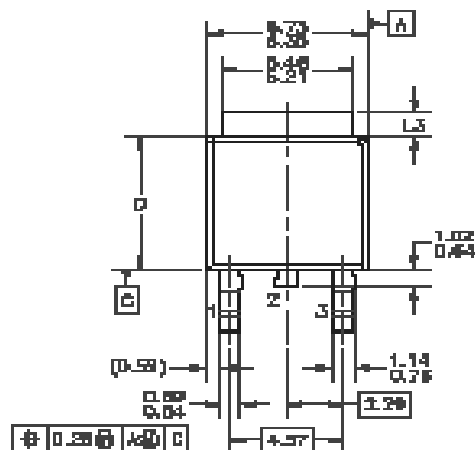
SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 uA	-0.7			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±25 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16 V, V _{GS} = 0 V			-1	uA
		V _{DS} = -16 V, V _{GS} = 0 V, T _J = 55°C			-5	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-41			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -24 A			59	mΩ
		V _{GS} = -2.5 V, I _D = -19 A			95	
Forward Tranconductance ^A	g _{fs}	V _{DS} = -10 V, I _D = -24 A		31		S
Diode Forward Voltage	V _{SD}	I _S = -41 A, V _{GS} = 0 V		-0.7		V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -24 A		16.7		nC
Gate-Source Charge	Q _{gs}			1.8		
Gate-Drain Charge	Q _{gd}			1.9		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, R _L = 15 Ω , ID = -24 A, VGEN = -10 V, RG = 6Ω		15		nS
Rise Time	t _r			12		
Turn-Off Delay Time	t _{d(off)}			62		
Fall-Time	t _f			46		

Notes

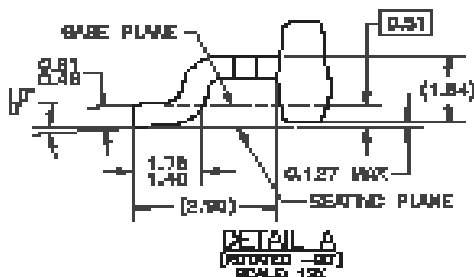
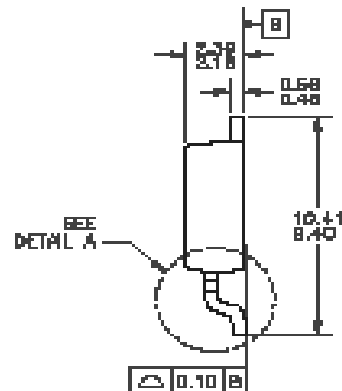
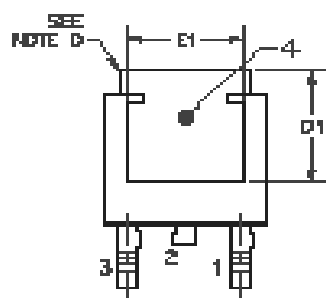
- Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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Package Information



LAND PATTERN RECOMMENDATION



- NOTES: UNLESS OTHERWISE SPECIFIED
 A) ALL DIMENSIONS ARE IN MILLIMETERS.
 B) THIS PACKAGE CONFORMS TO JEDEC, TO-262, ISSUE C, VARIATION AA, 30 DEC, DATED NOV. 1989.
 C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 D) HEAT SINK TOP EDGE COULD BE IN CHAMFERED CORNERS OR EDGE PROTRUSION.
 E) DIMENSIONS L3, D1 AND D1 TABLE:

	OPTIONAL A1	OPTIONAL A2
L3	0.88-1.27	1.02-2.52
D	0.92-0.99	0.93-0.99
E1	4.32 MIN	3.81 MIN
D1	3.11 MIN	4.27 MIN