

Analog Power AM20N15-250B MOSFET Datasheet

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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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N-Channel 150-V (D-S) MOSFET

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- Low thermal impedance
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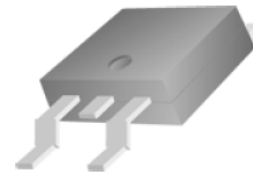
Typical Applications:

- White LED boost converters
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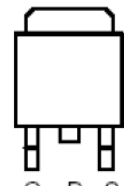
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
150	200 @ $V_{GS} = 10V$	21 ^a
	225 @ $V_{GS} = 5.5V$	



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TO-263



G D S

Top View

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	21	A
Pulsed Drain Current ^b		80	
Continuous Source Current (Diode Conduction) ^a	I_S	110	A
Power Dissipation ^a	P_D	300	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	62.5	$^\circ C/W$
Maximum Junction-to-Case	$R_{\theta JC}$	1	

Notes

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

Electrical Characteristics

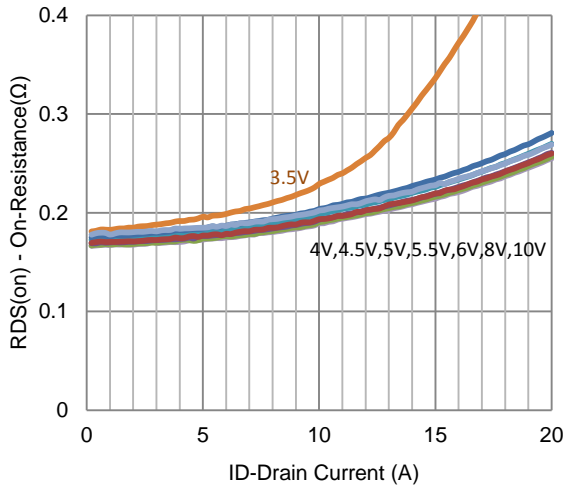
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 120 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 120 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	30			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 16.8 A$			200	m Ω
		$V_{GS} = 5.5 V, I_D = 13.4 A$			225	
Forward Transconductance	g_{fs}	$V_{DS} = 15 V, I_D = 20 A$		24		S
Diode Forward Voltage	V_{SD}	$I_S = 30 A, V_{GS} = 0 V$		0.99		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = 50 V, V_{GS} = 5.5 V,$ $I_D = 16.8 A$		11		nC
Gate-Source Charge	Q_{gs}			3.6		
Gate-Drain Charge	Q_{gd}			4.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 75 V, R_L = 4.4 \Omega,$ $I_D = 16.8 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		16		ns
Rise Time	t_r			24		
Turn-Off Delay Time	$t_{d(off)}$			32		
Fall Time	t_f			20		
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$		1233		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			38		

Notes

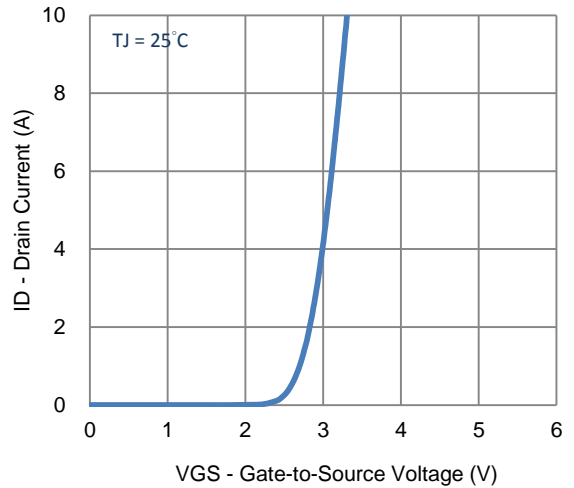
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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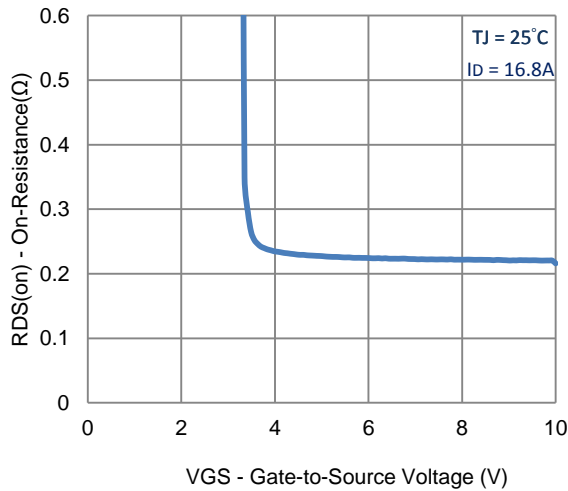
Typical Electrical Characteristics



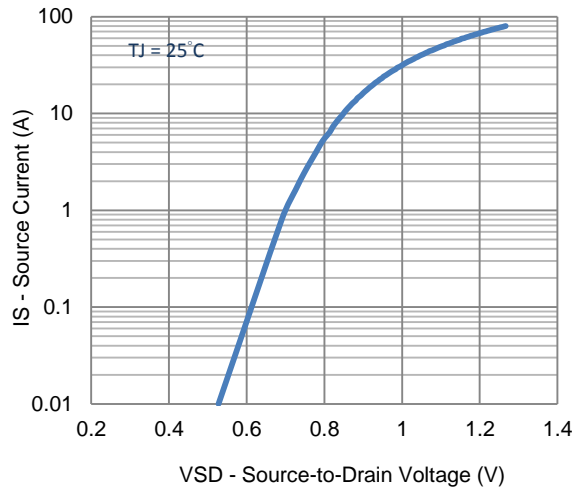
1. On-Resistance vs. Drain Current



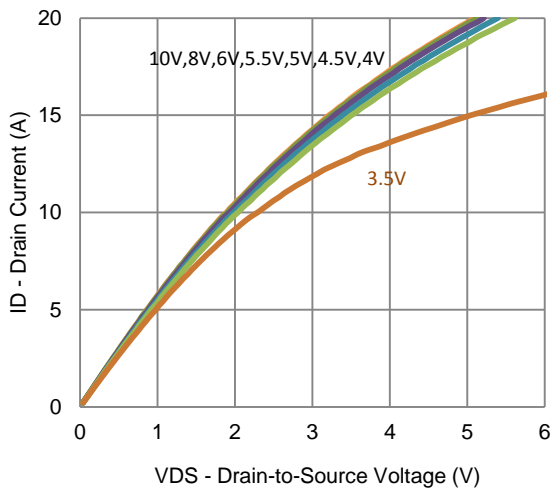
2. Transfer Characteristics



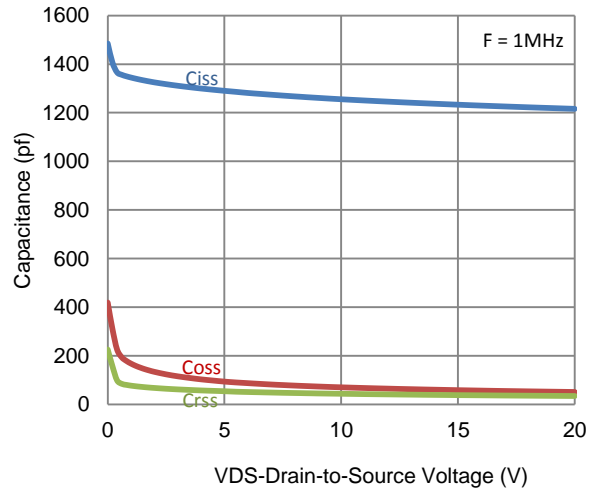
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

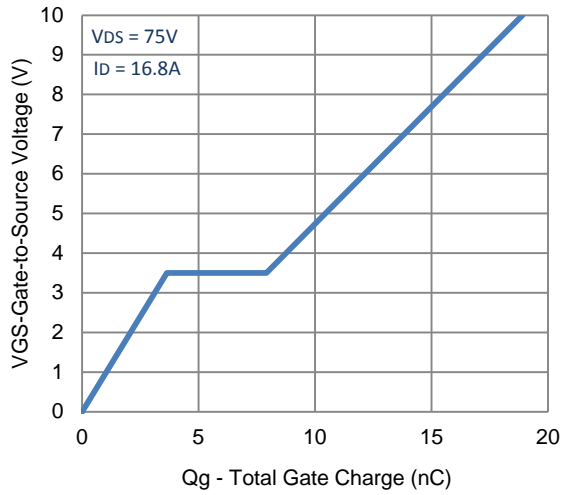


5. Output Characteristics

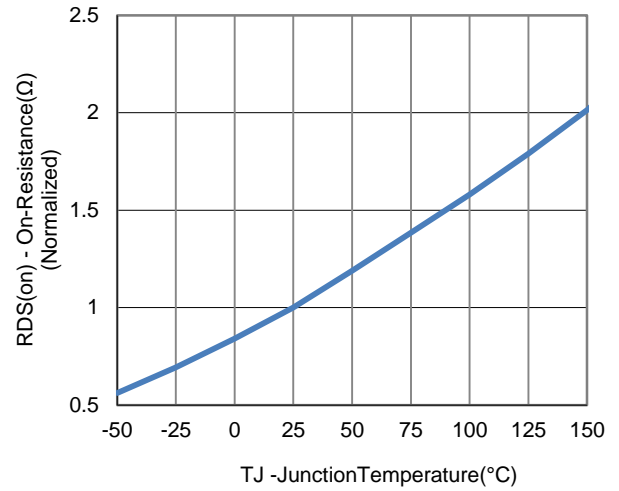


6. Capacitance

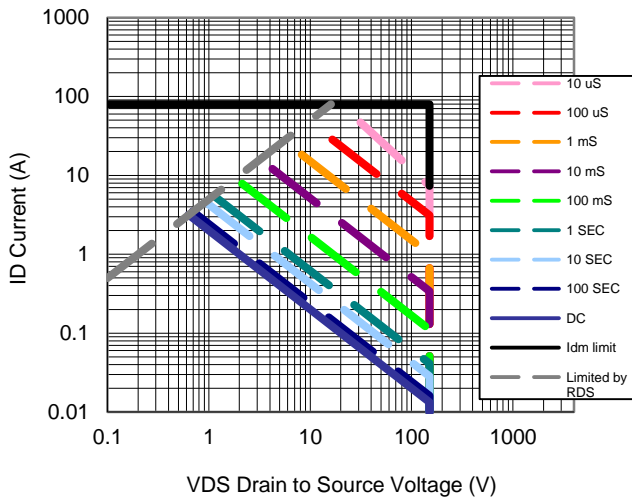
Typical Electrical Characteristics



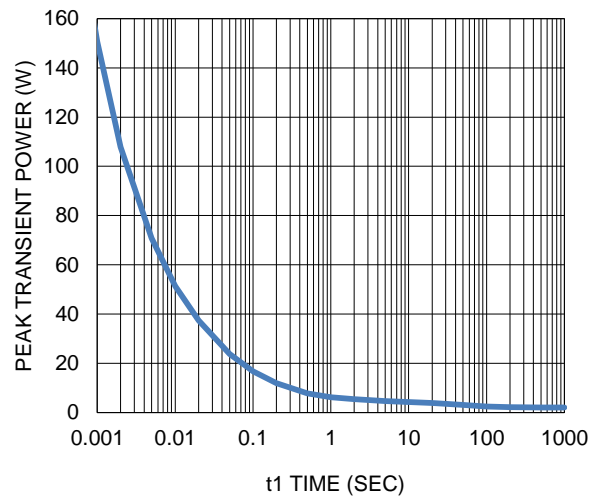
7. Gate Charge



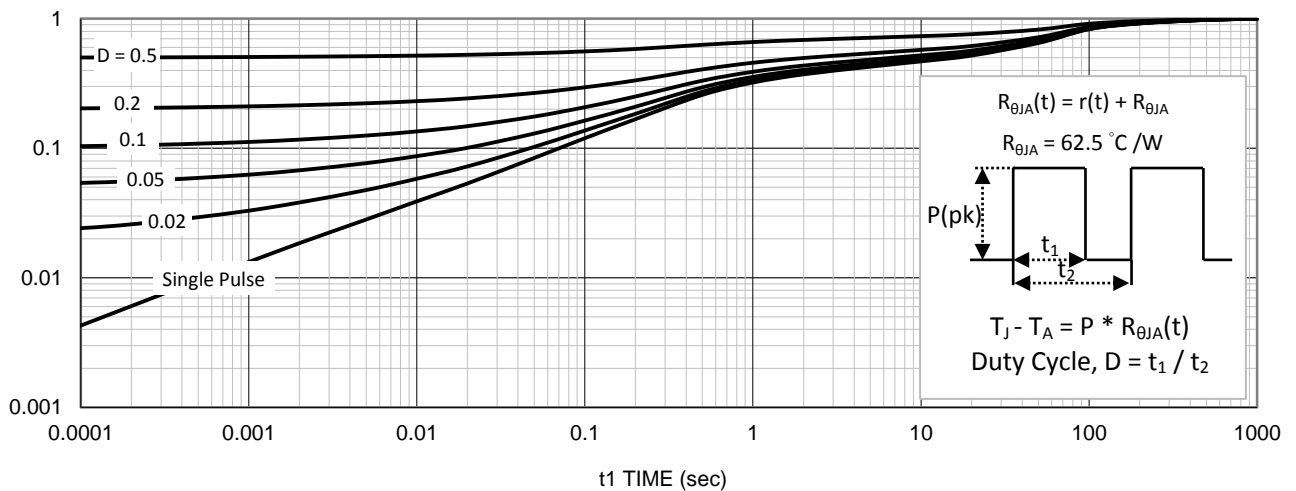
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

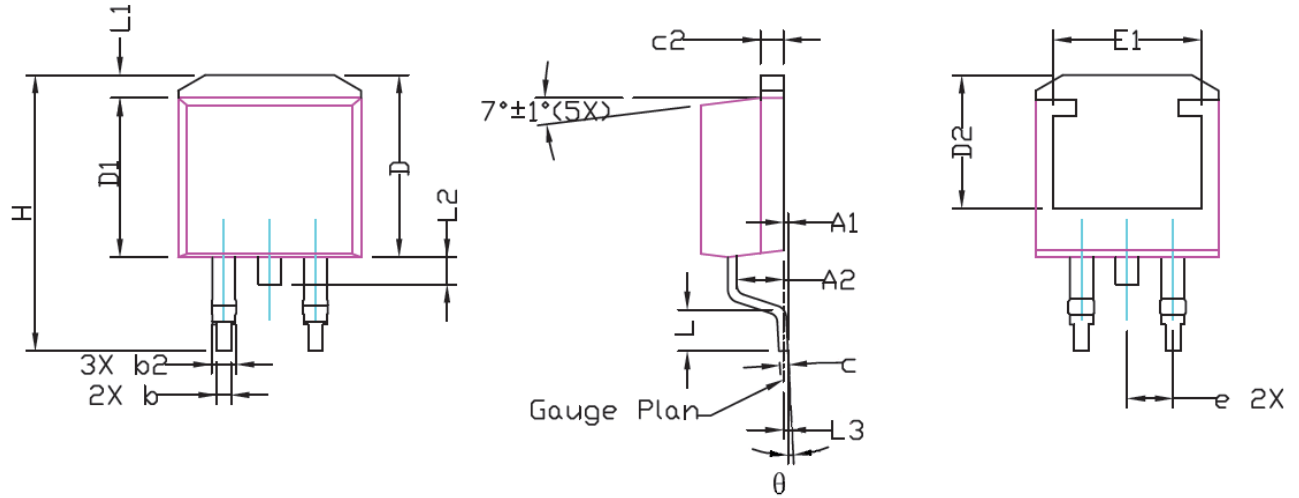


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



SYMBOL	DIMENSIONAL REQMTS			INCHES REQMTS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.57	4.72	0.169	0.180	0.186
A1	0	---	0.25	0	---	0.010
A2	2.47	2.57	2.67	0.097	0.101	0.105
b	0.69	0.813	0.94	0.027	0.032	0.037
b2	1.17	1.27	1.45	0.046	0.050	0.057
c	0.48	0.50	0.60	0.019	0.020	0.024
c2	1.17	1.27	1.37	0.046	0.050	0.054
D	9.80	10.05	10.30	0.386	0.396	0.406
D1	8.64	8.78	9.65	0.340	0.346	0.380
D2	7.12	7.37	7.62	0.280	0.290	0.300
E	9.70	10.15	10.54	0.382	0.400	0.415
E1	8.00	8.20	8.40	0.315	0.323	0.331
e	2.54 BSC			0.100 BSC		
H	14.99	15.24	15.49	0.590	0.600	0.610
L	1.78	2.29	2.79	0.070	0.090	0.110
L1	1.02	1.27	1.52	0.040	0.050	0.060
L2	---	---	1.75	---	---	0.069
L3	---	0.254	---	---	0.010	---
θ	0°	---	8°	0°	---	8°