

N-Channel 200-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:

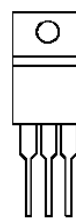
- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
200	45 @ $V_{GS} = 10V$	80 ^a
	60 @ $V_{GS} = 5.5V$	

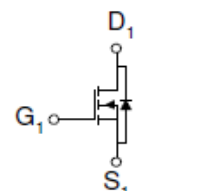


RoHS
COMPLIANT
HALOGEN
FREE

TO-220CFM



G D S
Top View



N-Channel MOSFET

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

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	80	A
Pulsed Drain Current ^b		100	
Continuous Source Current (Diode Conduction) ^a	I_S	63	A
Power Dissipation ^a	P_D	60	W
Operating Junction and Storage Temperature Range		-55 to 175	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	2.5	

Notes

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

Electrical Characteristics

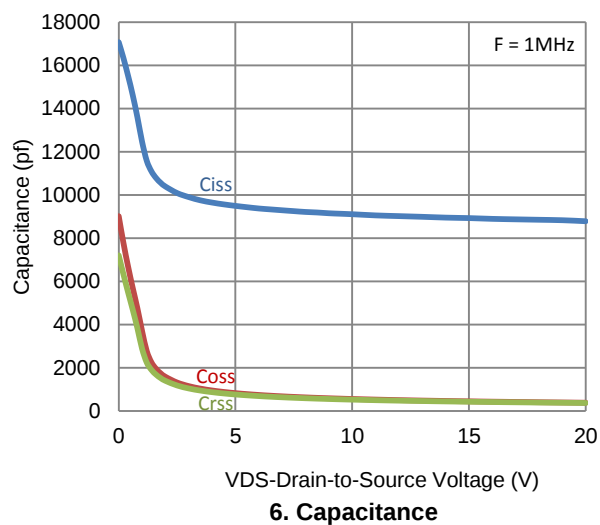
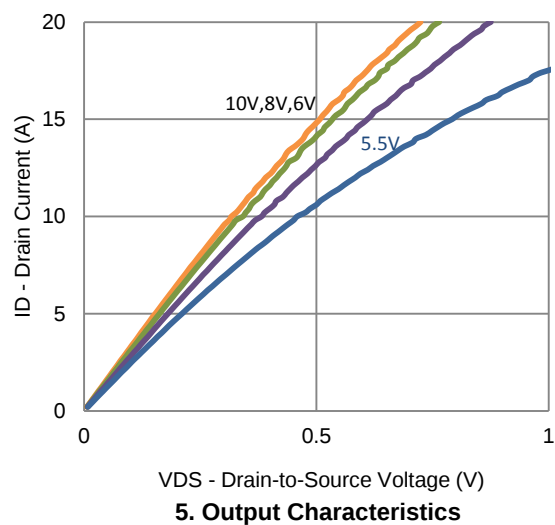
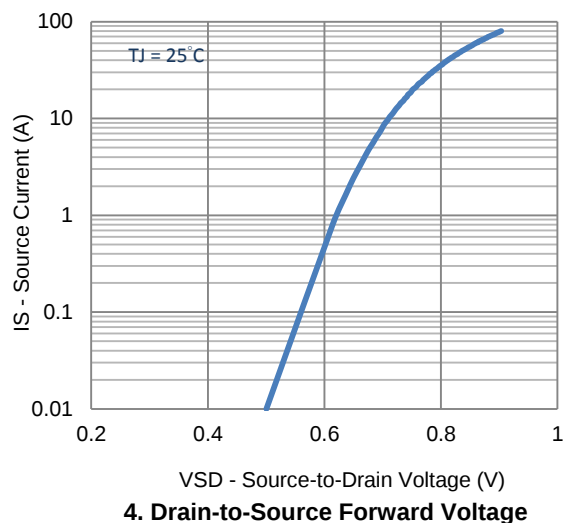
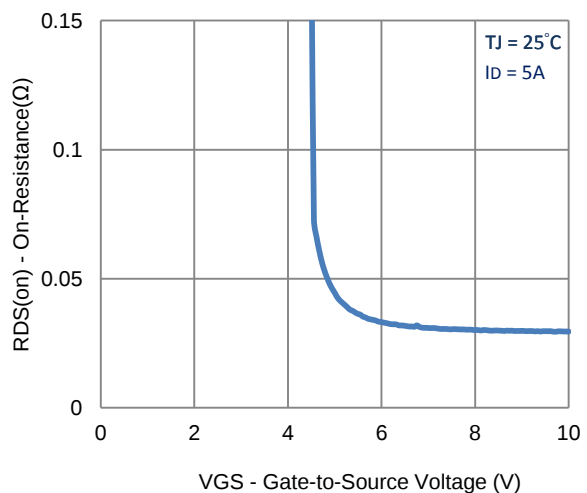
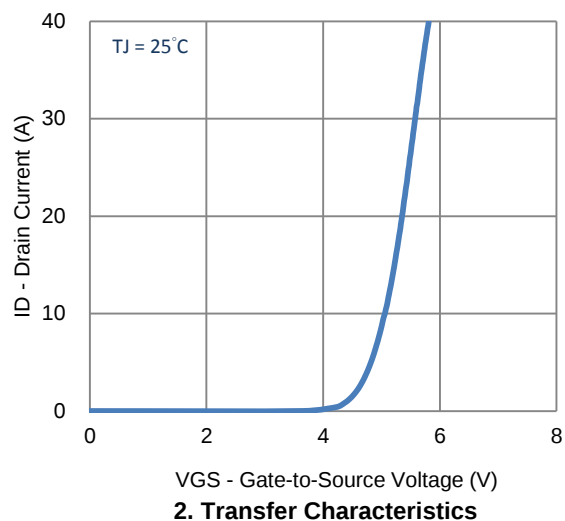
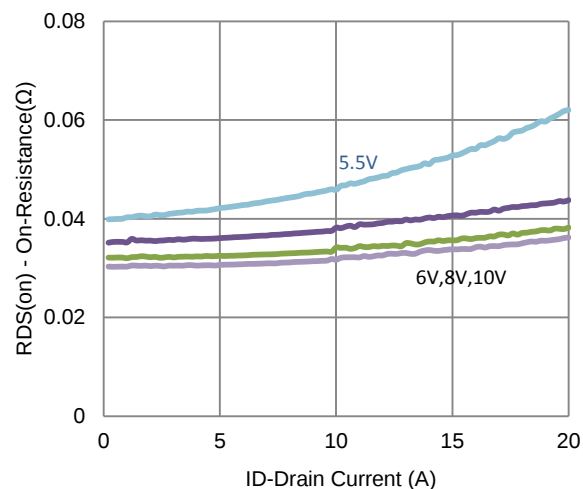
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 160 V, V_{GS} = 0 V$			1	uA
		$V_{DS} = 160 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	90			A
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 5 A$			45	mΩ
		$V_{GS} = 5.5 V, I_D = 4 A$			60	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 V, I_D = 5 A$		35		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 31 A, V_{GS} = 0 V$		0.87		V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = 100 V, V_{GS} = 5.5 V,$ $I_D = 5 A$		100		nC
Gate-Source Charge	Q_{gs}			34		
Gate-Drain Charge	Q_{gd}			65		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 100 V, R_L = 20 \Omega,$ $I_D = 5 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		49		ns
Rise Time	t_r			68		
Turn-Off Delay Time	$t_{d(off)}$			199		
Fall Time	t_f			61		
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$		8925		pF
Output Capacitance	C_{oss}			444		
Reverse Transfer Capacitance	C_{rss}			424		

Notes

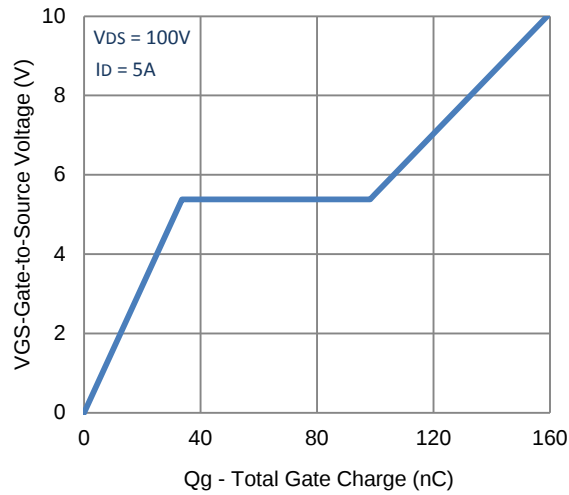
- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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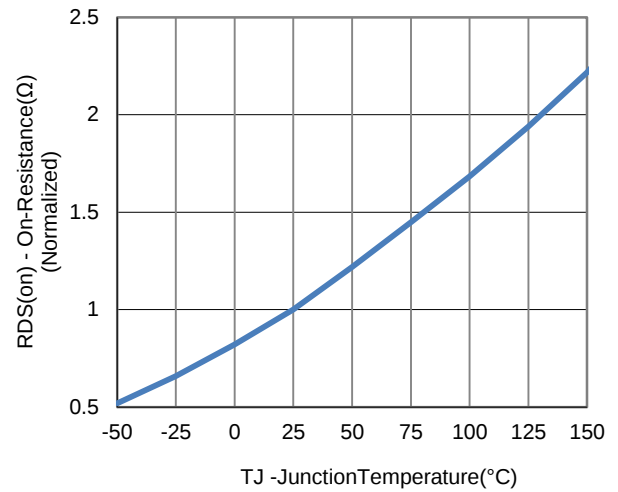
Typical Electrical Characteristics



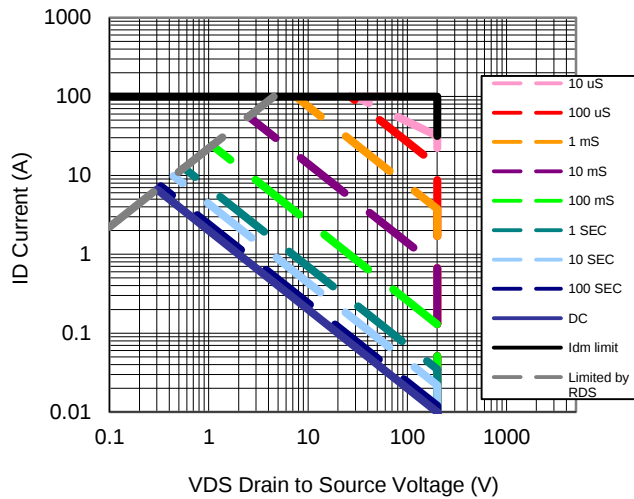
Typical Electrical Characteristics



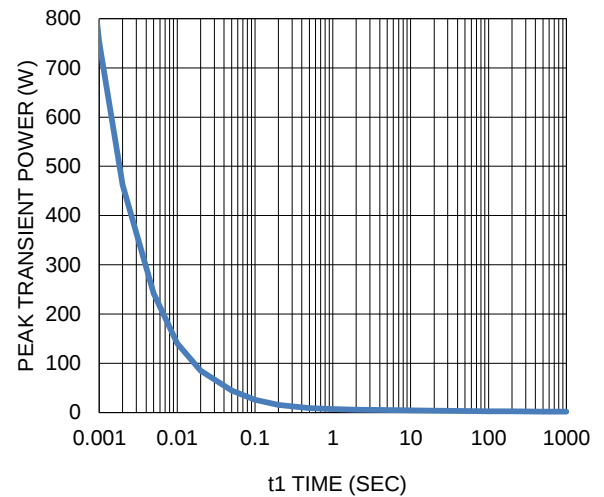
7. Gate Charge



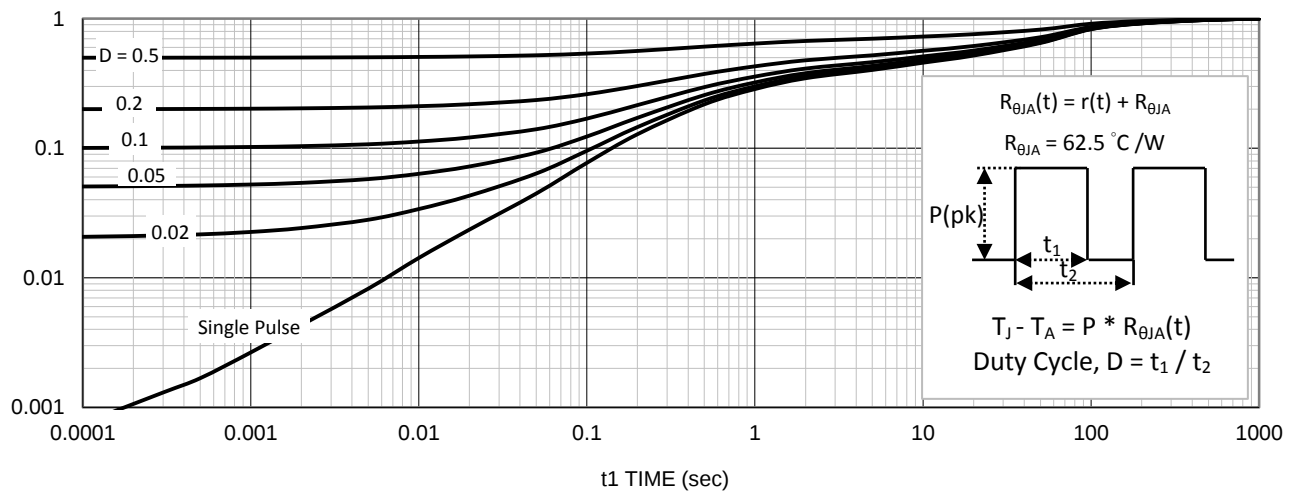
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

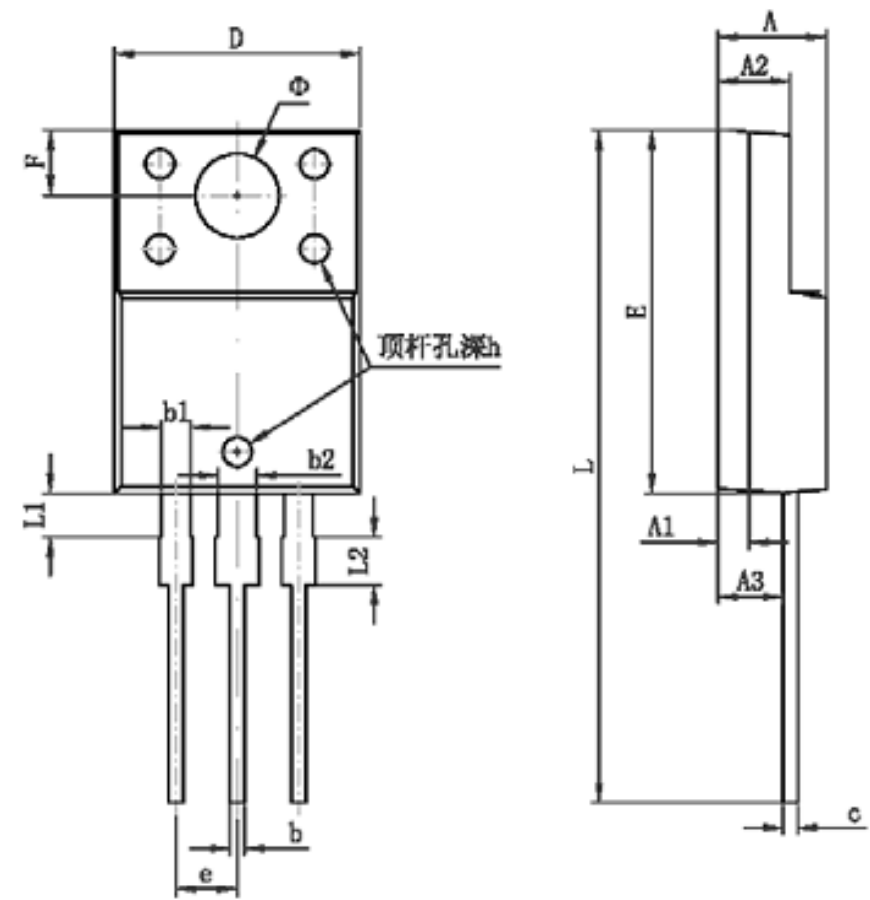


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.700	0.169	0.185
A1	1.300 REF		0.051 REF	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP		0.100 TYP	
F	2.700 REF		0.106 REF	
φ	3.500 REF		0.138 REF	
h	0.000	0.300	0.000	0.012
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	1.900	2.100	0.075	0.083