N-Channel 100-V (D-S) MOSFET

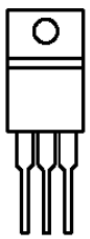
Key Features:
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (mΩ)	I_D(A)
100	16 @ V_{GS} = 10V	90[a]
	19 @ V_{GS} = 5.5V	

Pb-free
RoHS COMPLIANT
HALOGEN FREE

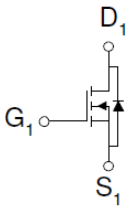
TO-220AB



DRAIN connected to TAB

G D S

Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Limit**	**Units**
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current [a]	T_A=25°C	I_D	90	A
Pulsed Drain Current [b]		I_{DM}	240	
Continuous Source Current (Diode Conduction) [a]		I_S	90	A
Power Dissipation [a]	T_A=25°C	P_D	300	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	°C

THERMAL RESISTANCE RATINGS			
Parameter	**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient [a]	$R_{\theta JA}$	62.5	°C/W
Maximum Junction-to-Case	$R_{\theta JC}$	0.5	

Notes

a. Surface Mounted on 1” x 1” FR4 Board.

b. Pulse width limited by maximum junction temperature

Electrical Characteristics

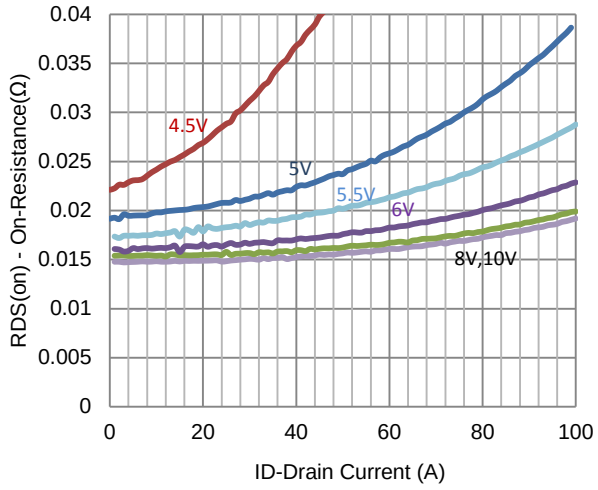
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±25 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V			1	uA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	180			A
Drain-Source On-Resistance	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 30 A			16	mΩ
		V_{GS} = 5.5 V, I_D = 20 A			19	
Forward Transconductance	g_{fs}	V_{DS} = 15 V, I_D = 20 A		40		S
Diode Forward Voltage	V_{SD}	I_S = 45 A, V_{GS} = 0 V		0.9		V
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 50 V, V_{GS} = 5.5 V, I_D = 20 A		60		nC
Gate-Source Charge	Q_{gs}			19		
Gate-Drain Charge	Q_{gd}			39		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = 50 V, R_L = 2.5 Ω, I_D = 20 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		25		ns
Rise Time	t_r			49		
Turn-Off Delay Time	$t_{d(off)}$			111		
Fall Time	t_f			44		
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		4221		pF
Output Capacitance	C_{oss}			392		
Reverse Transfer Capacitance	C_{rss}			364		

Notes

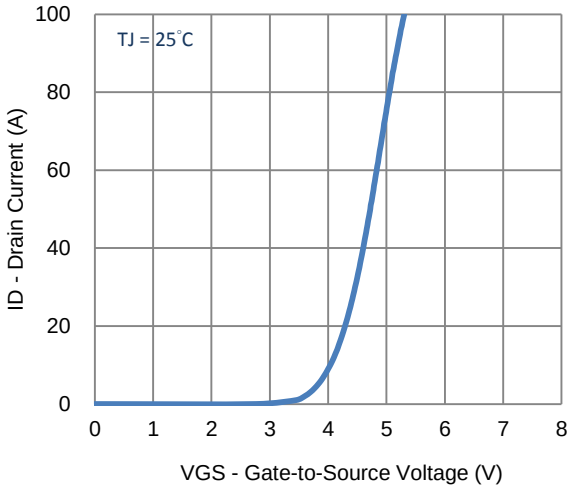
a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing.

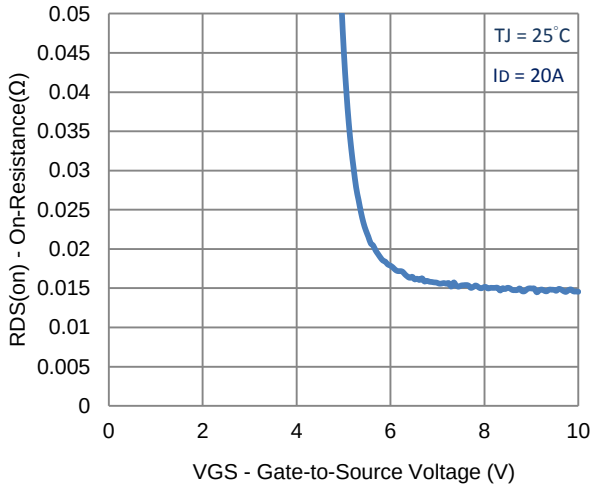
Typical Electrical Characteristics



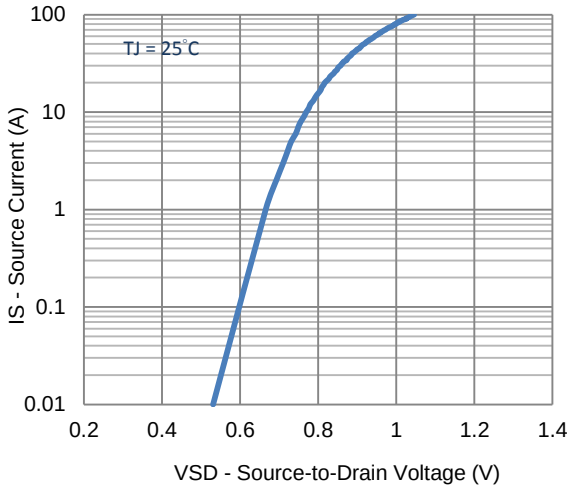
1. On-Resistance vs. Drain Current



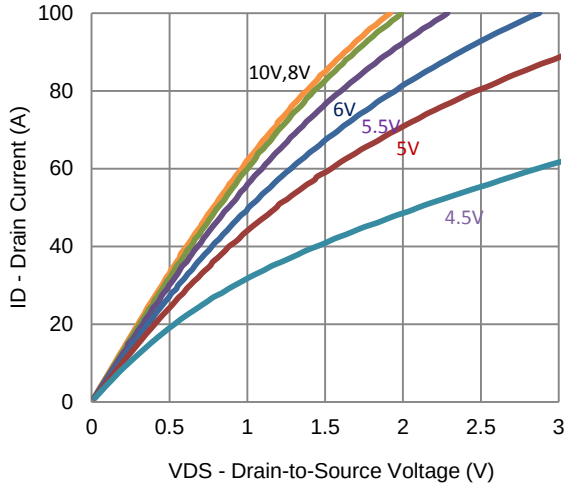
2. Transfer Characteristics



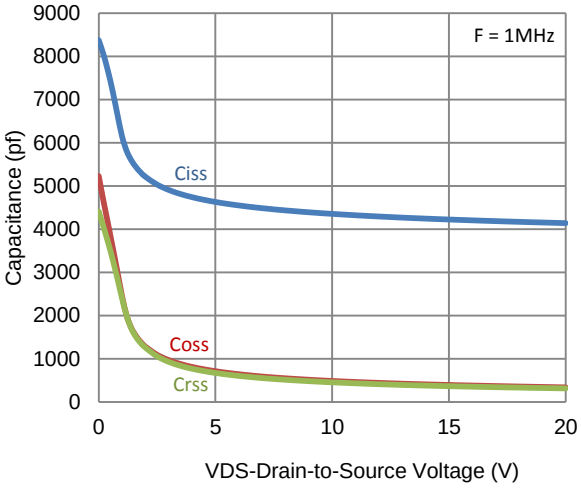
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

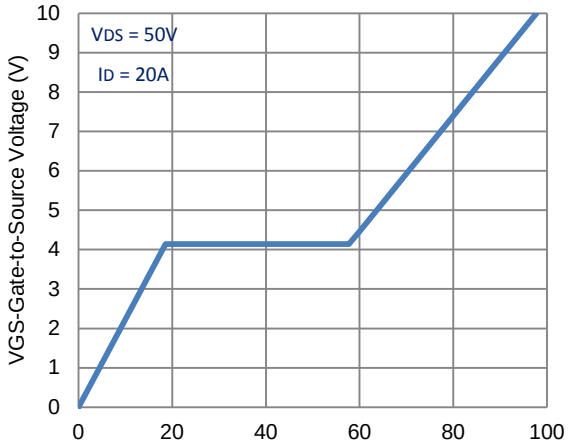


5. Output Characteristics

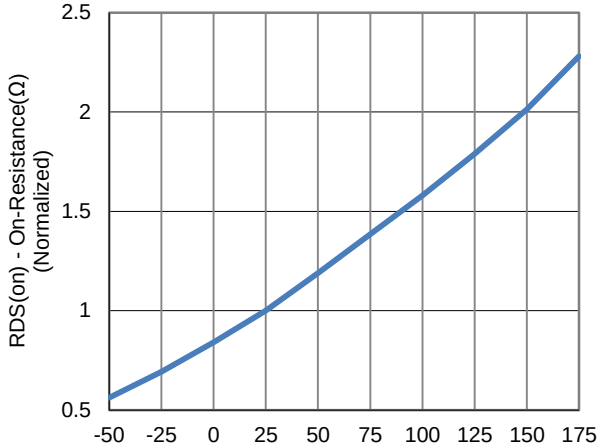


6. Capacitance

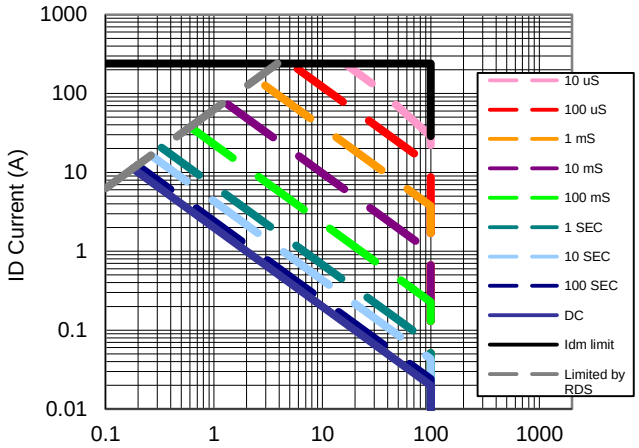
Typical Electrical Characteristics



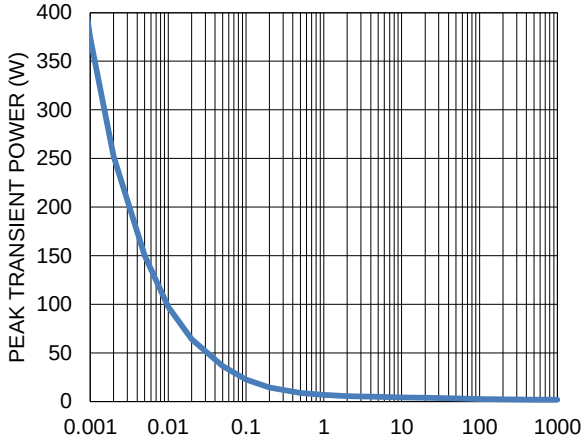
7. Gate Charge



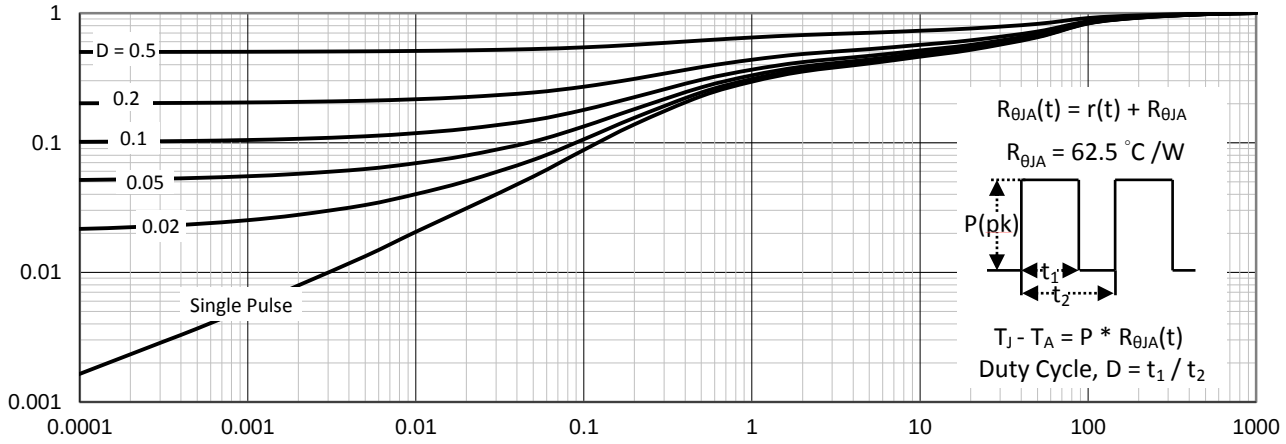
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

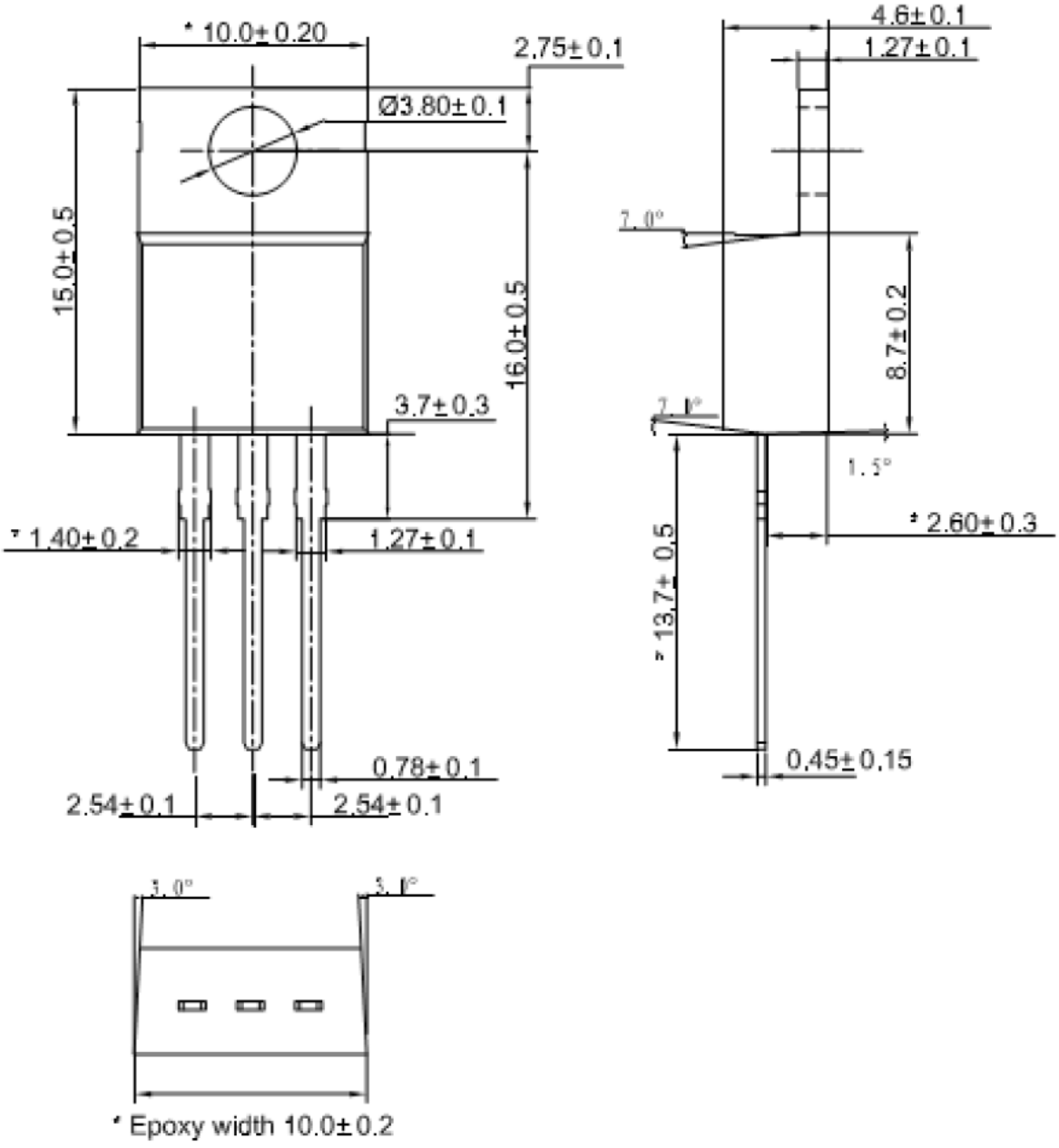


10. Single Pulse Maximum Power Dissipation

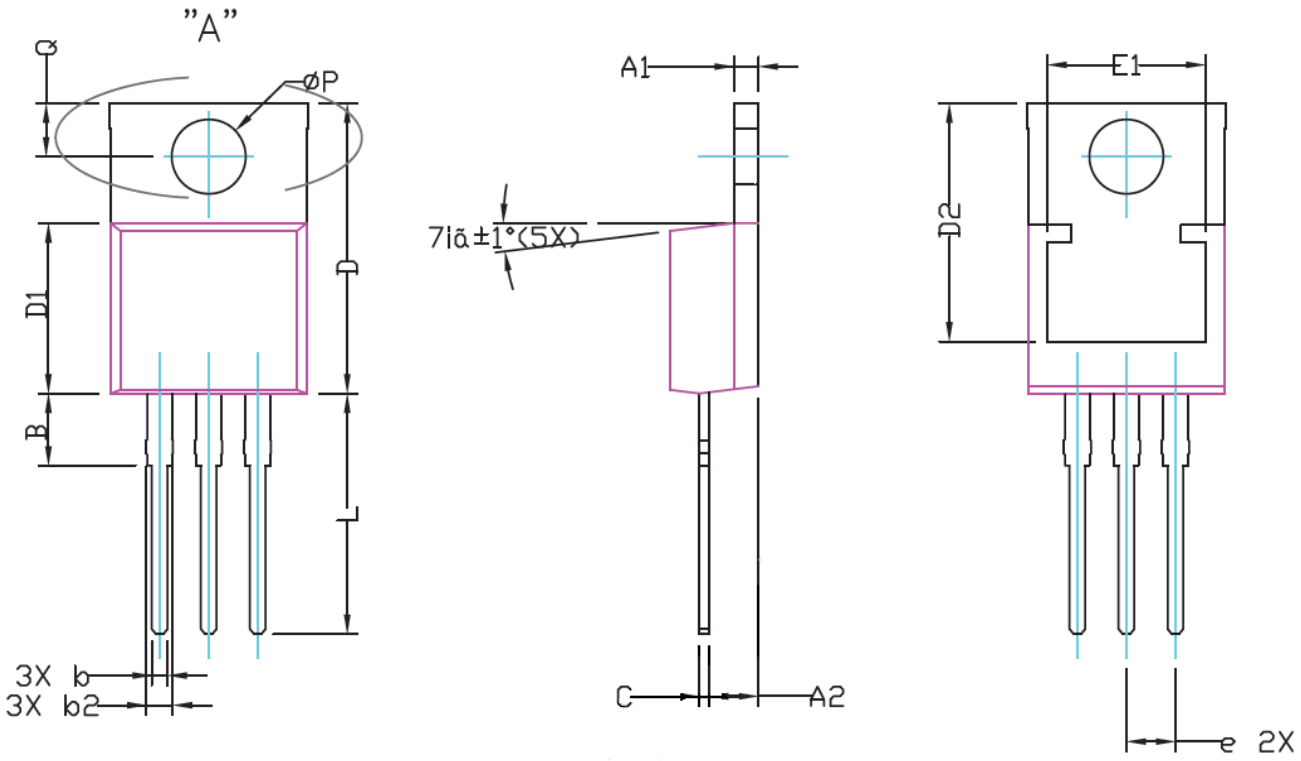


11. Normalized Thermal Transient Junction to Ambient

Package Information



Package Information



SYMBOL	DIMENSIONAL REQMTS			INCHES REQMTS		
	MIN	NOM	MAX	MIN	NOM	MAX
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
D	14.50	14.96	15.74	0.571	0.589	0.620
D1	8.64	8.78	9.65	0.340	0.346	0.380
D2	12.08	12.28	12.48	0.476	0.483	0.491
L	12.27	12.40	13.48	0.483	0.488	0.531
B	3.55	3.72	3.90	0.140	0.146	0.154
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
e	2.54 BSC			0.100 BSC		
A	4.30	4.57	4.72	0.169	0.180	0.186
A1	1.17	1.27	1.37	0.046	0.050	0.054
A2	2.47	2.57	2.67	0.097	0.101	0.105
c	0.48	0.50	0.60	0.019	0.020	0.024
ØP	3.79	3.835	3.89	0.149	0.151	0.153
Q	2.59	2.747	2.89	0.102	0.108	0.114

Package Information