

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-200V	0.24Ω@10V	-11A

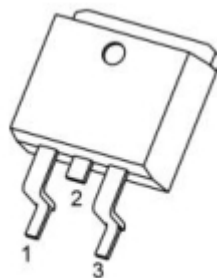
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

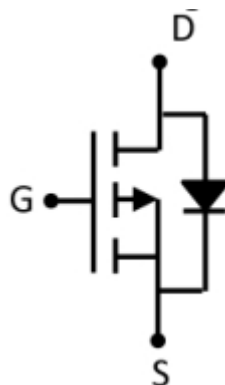
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

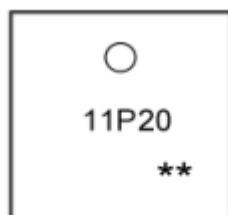


TO-263(G:1 D:2 S:3)

Circuit diagram



Marking



11P20

=Device Code
=Week Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-200	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹ (T _C = 25°C)	I _D	-11	W
Pulsed Drain Current ²	I _{DM}	-44	A
Single Pulse Avalanche Energy ³	E _{AS}	700	mJ
Total Power Dissipation ⁴ (T _C = 25°C)	P _D	125	W
Thermal Resistance Junction- Case ¹	R _{θJC}	1.0	°C/ W
Storage Temperature Range	T _{STG}	-55~ +150	°C
Operating Junction Temperature Range	T _J	-55~ +150	°C

Electrical characteristics

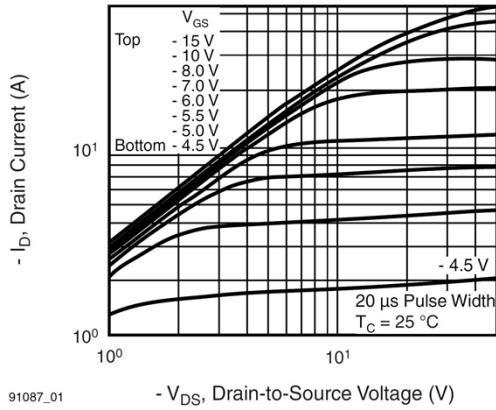
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-200			V
Bvdss Temperature Coefficient	$\Delta BV_{DSS}/\Delta T$	$I_D = -250\mu A$, Reference $25^{\circ}C$		-0.2		V/ $^{\circ}C$
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -160V, V_{GS} = 0V$, $T_J = 25^{\circ}C$			-100	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-2	-3	-4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -5.5A$		0.24	0.3	Ω
Dynamic characteristics ⁴						
Input Capacitance	C_{iss}	$V_{DS} = -25V, V_{GS} = 0V$, $f = 1MHz$		1180		pF
Output Capacitance	C_{oss}			344		
Reverse Transfer Capacitance	C_{rss}			83		
Switching Characteristics						
Total Gate Charge(4.5V)	Q_g	$V_{DS} = -160V, V_{GS} = -10V$, $I_D = -11A$		22		nC
Gate-Source Charge	Q_{gS}			6		
Gate-Drain Charge	Q_{gd}			20.5		
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = -100V, V_{GS} = -10V, R_G = 9.1\Omega, I_D = -11A$		24		nS
Rise Time	T_r			61		
Turn-Off Delay Time	$T_{d(off)}$			45		
Fall Time	T_f			37		

Note :

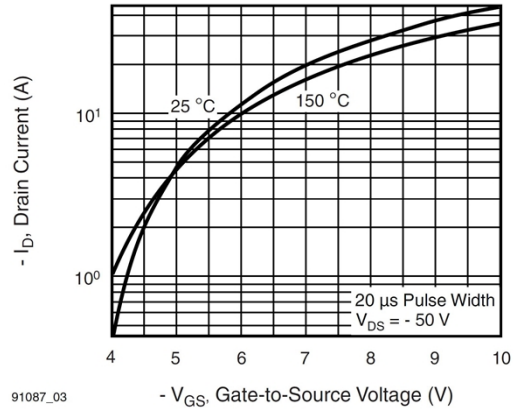
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $I_D = -5A, L = 5mH$

Typical Characteristics



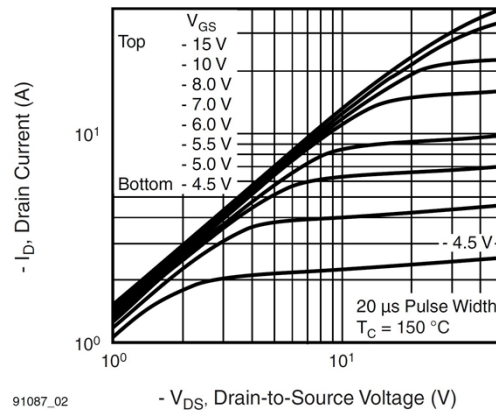
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Typical Output Characteristics, $T_C = 25^\circ\text{C}$



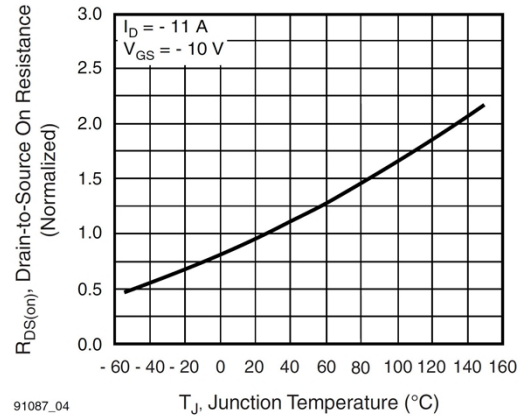
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Typical Transfer Characteristics



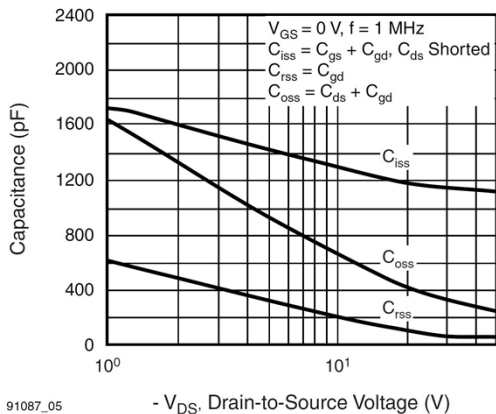
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Typical Output Characteristics, $T_C = 150^\circ\text{C}$



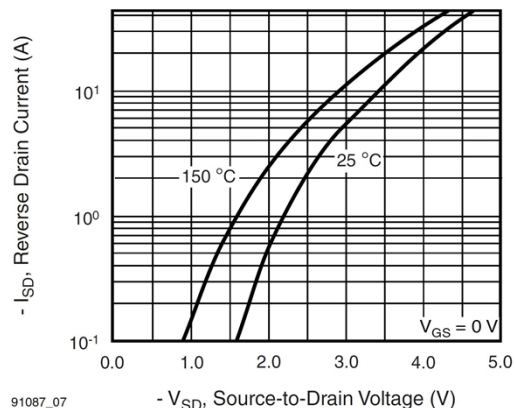
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Normalized On-Resistance vs. Temperature



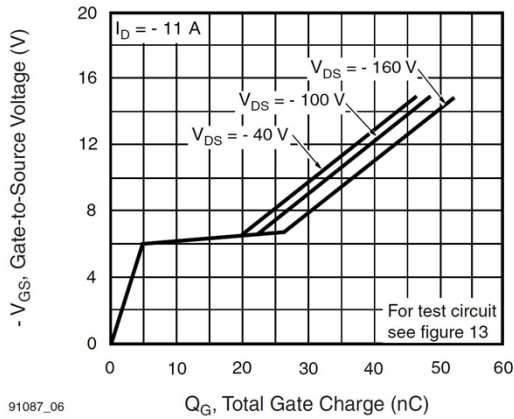
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Typical Capacitance vs. Drain-to-Source Voltage

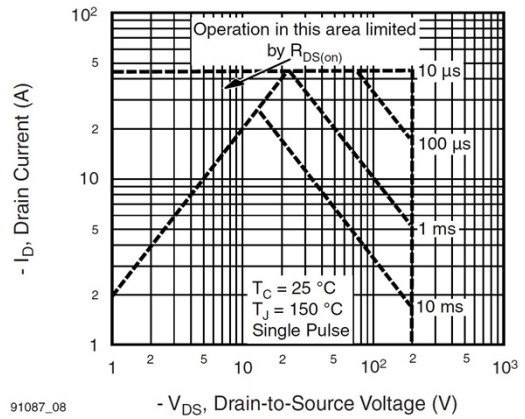


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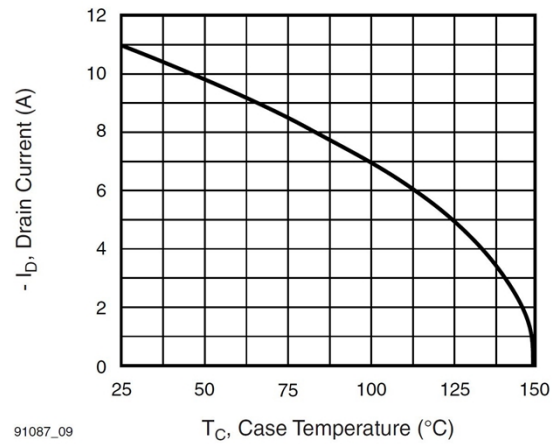
Typical Source-Drain Diode Forward Voltage



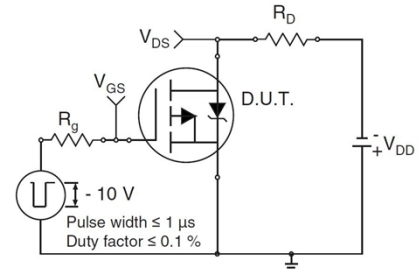
Typical Gate Charge vs. Gate-to-Source Voltage



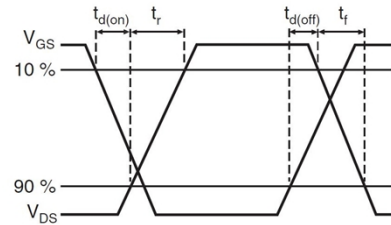
Maximum Safe Operating Area



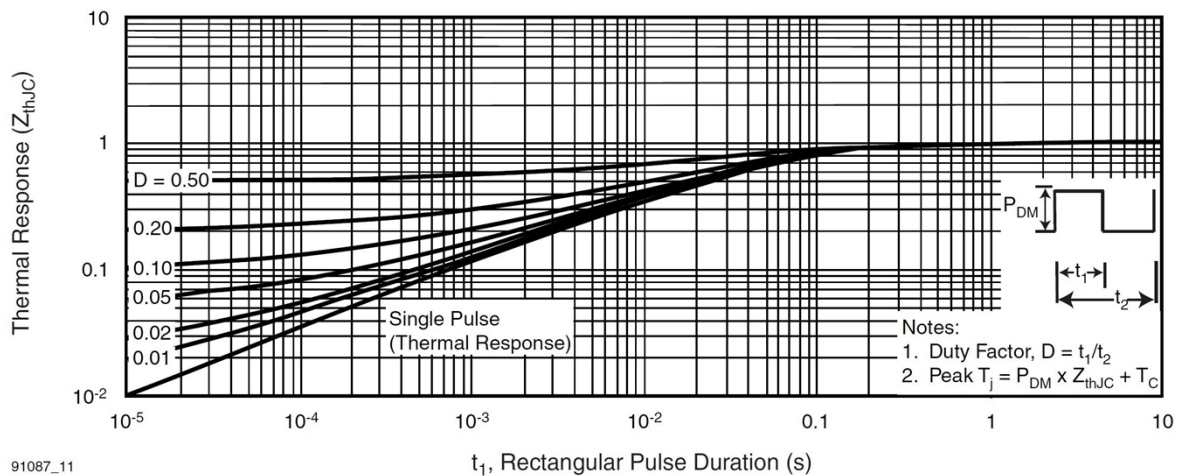
Maximum Drain Current vs. Case Temperature



Switching Time Test Circuit

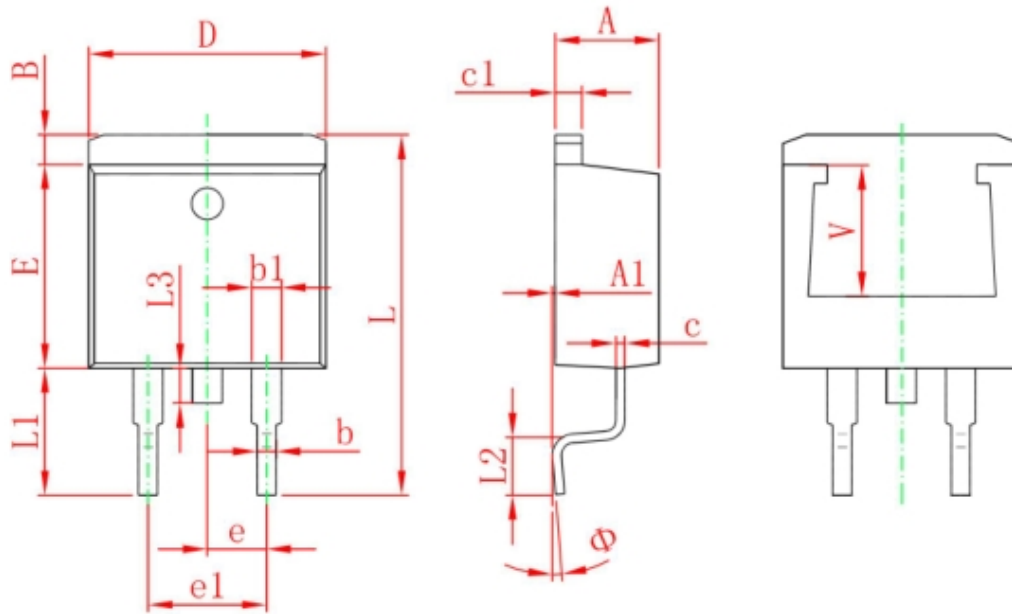


Switching Time Waveforms



Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	