

Electrical Characteristics @ T_J = 25°C (Unless Otherwise Specified)

	Parameter	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-to-Source Breakdown Voltage	-100	—	—	V	V _{GS} = 0V, I _D = -250μA
ΔBV _{DSS} /ΔT _J	Temperature Coefficient of Breakdown Voltage	—	-0.11	—	V/°C	Reference to 25°C, I _D = -1.0mA
R _{DS(on)}	Static Drain-to-Source On-State Resistance	—	—	0.06	Ω	V _{GS} = -10V, I _D = -19A ④
V _{GS(th)}	Gate Threshold Voltage	-2.0	—	-4.0	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	10	—	—	S	V _{DS} = -15V, I _{DS} = -19A ④
I _{DSS}	Zero Gate Voltage Drain Current	—	—	-25	μA	V _{DS} = -100V, V _{GS} = 0V
		—	—	-250	μA	V _{DS} = -80V, V _{GS} = 0V, T _J = 125°C
I _{GSS}	Gate-to-Source Leakage Forward	—	—	-100	nA	V _{GS} = -20V
I _{GSS}	Gate-to-Source Leakage Reverse	—	—	100	nA	V _{GS} = 20V
Q _g	Total Gate Charge	—	—	215	nC	V _{GS} = -10V, I _D = -19A
Q _{gs}	Gate-to-Source Charge	—	—	30	nC	V _{DS} = -80V
Q _{gd}	Gate-to-Drain ('Miller') Charge	—	—	115	nC	
t _{d(on)}	Turn-On Delay Time	—	—	28	ns	V _{DD} = -50V, I _D = -19A, V _{GS} = -10V, R _G = 2.5Ω
t _r	Rise Time	—	—	150	ns	
t _{d(off)}	Turn-Off Delay Time	—	—	103	ns	
t _f	Fall Time	—	—	116	ns	
L _S + L _D	Total Inductance	—	4.0	—	nH	Measured from the center of drain pad to center of source pad
C _{iss}	Input Capacitance	—	2700	—	pF	V _{GS} = 0V, V _{DS} = -25V
C _{oss}	Output Capacitance	—	830	—	pF	f = 1.0MHz
C _{rss}	Reverse Transfer Capacitance	—	470	—	pF	

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-31	A	
I _{SM}	Pulse Source Current (Body Diode) ①	—	—	-124	A	
V _{SD}	Diode Forward Voltage	—	—	-1.6	V	T _J = 25°C, I _S = -19A, V _{GS} = 0V ④
t _{rr}	Reverse Recovery Time	—	—	290	ns	T _J = 25°C, I _F = -19A, di/dt ≤ -100A/μs
Q _{RR}	Reverse Recovery Charge	—	—	2.1	μC	V _{DD} ≤ -50V ④
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by L _S + L _D .				

Thermal Resistance

	Parameter	Min	Typ	Max	Units	Test Conditions
R _{thJC}	Junction-to-Case	—	—	1.0	°C/W	

Note: Corresponding Spice and Saber models are available on International Rectifier Website.

For footnotes refer to the last page

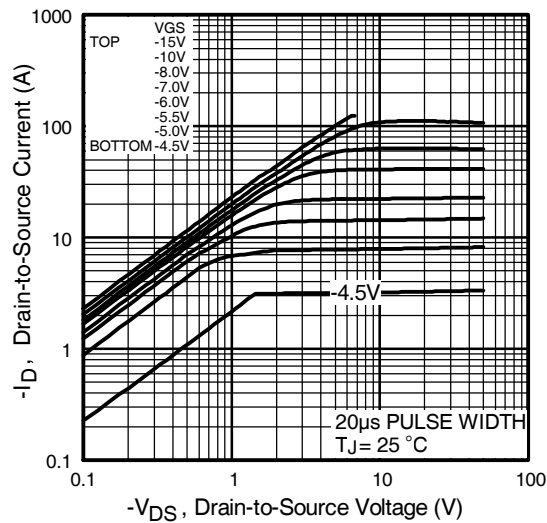


Fig 1. Typical Output Characteristics

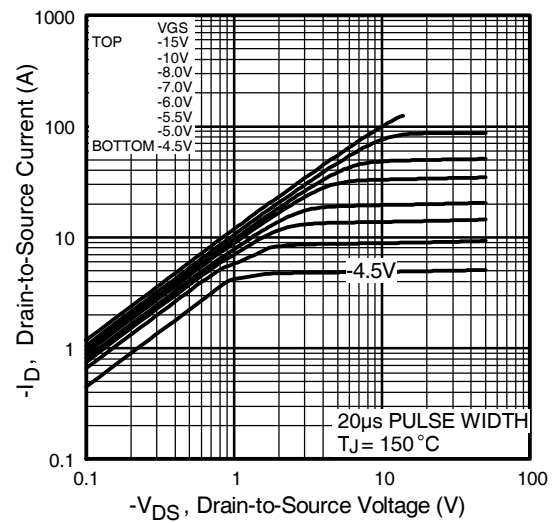


Fig 2. Typical Output Characteristics

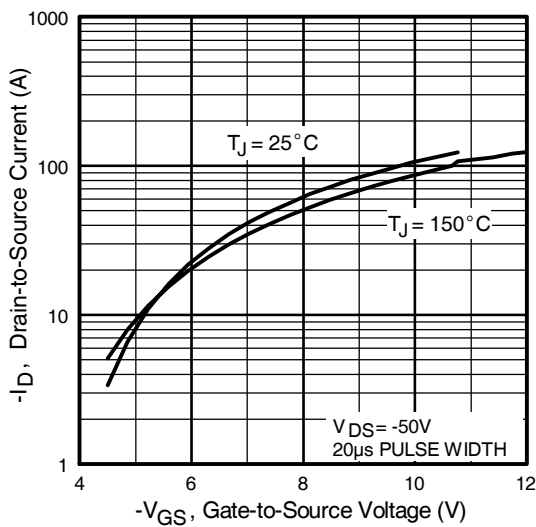


Fig 3. Typical Transfer Characteristics

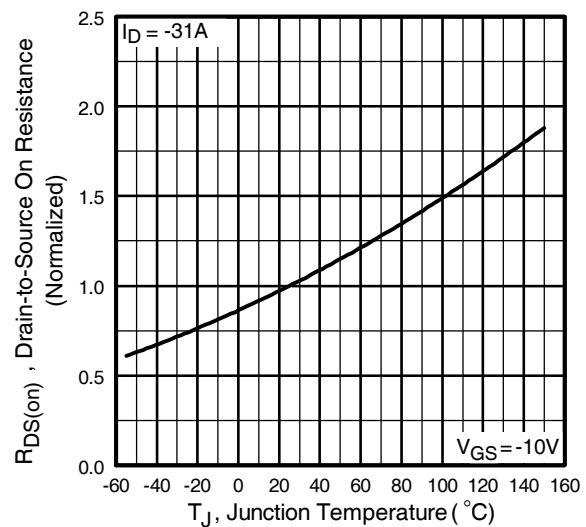


Fig 4. Normalized On-Resistance
Vs. Temperature

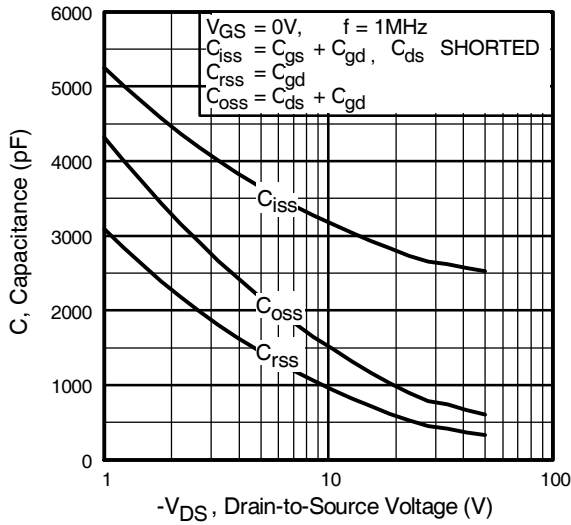


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

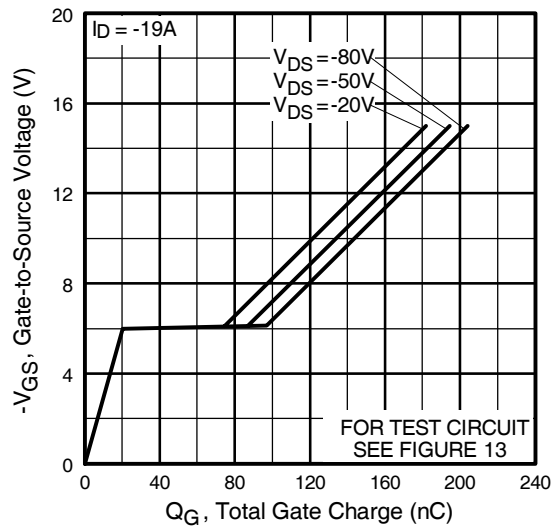


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

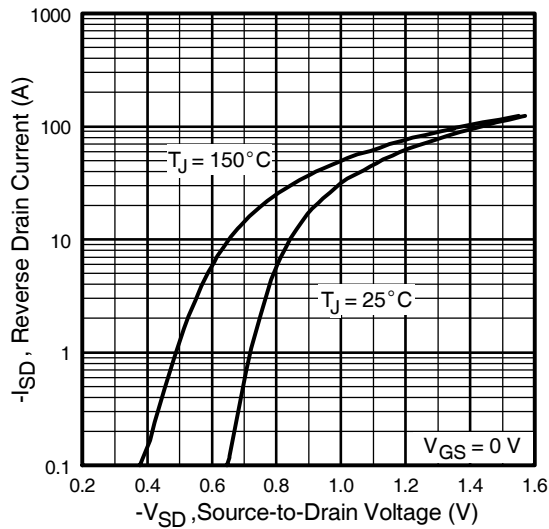


Fig 7. Typical Source-Drain Diode Forward Voltage

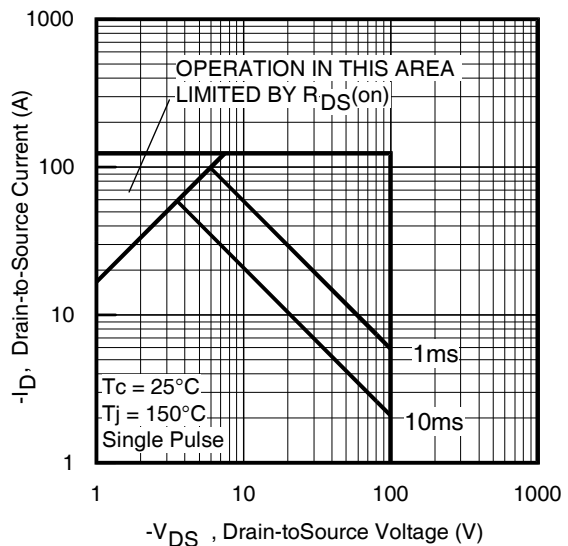


Fig 8. Maximum Safe Operating Area

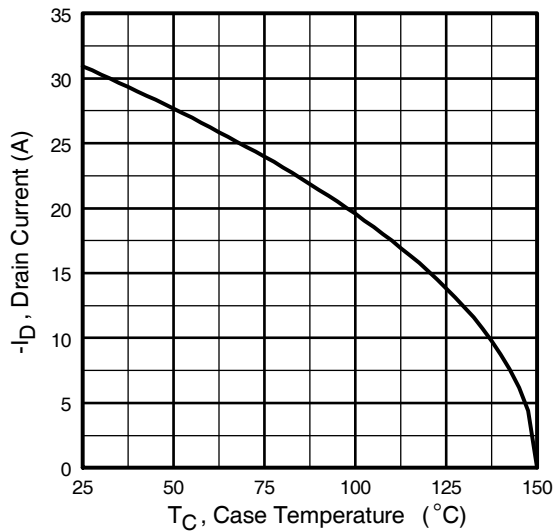


Fig 9. Maximum Drain Current Vs. Case Temperature

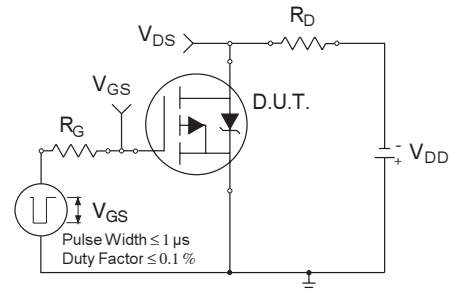


Fig 10a. Switching Time Test Circuit

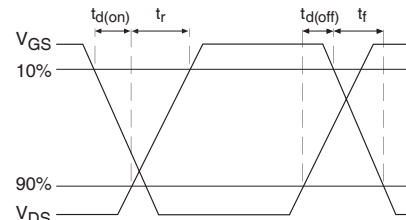


Fig 10b. Switching Time Waveforms

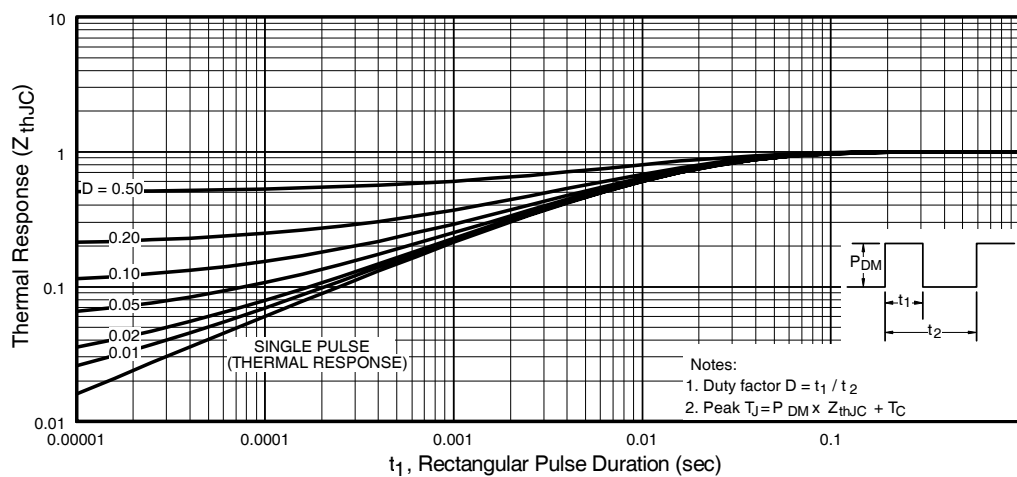


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

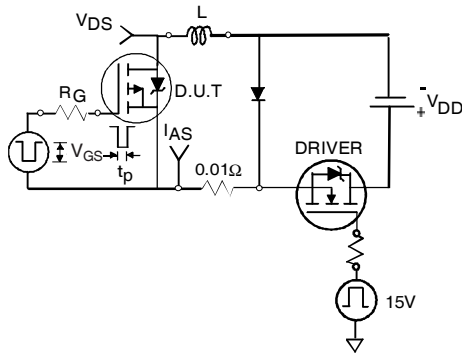


Fig 12a. Unclamped Inductive Test Circuit

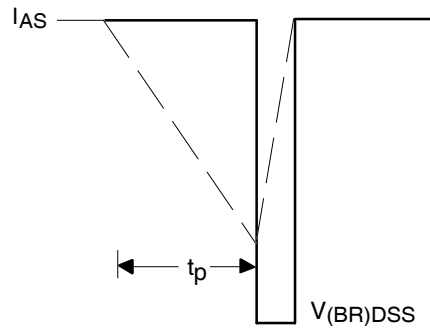


Fig 12b. Unclamped Inductive Waveforms

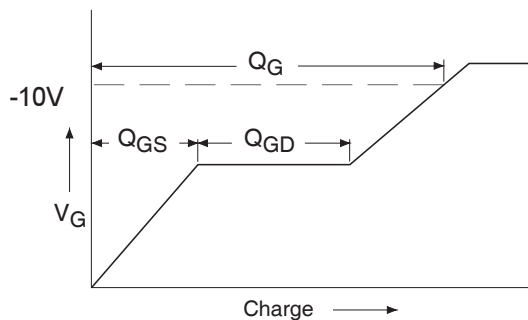


Fig 13a. Basic Gate Charge Waveform

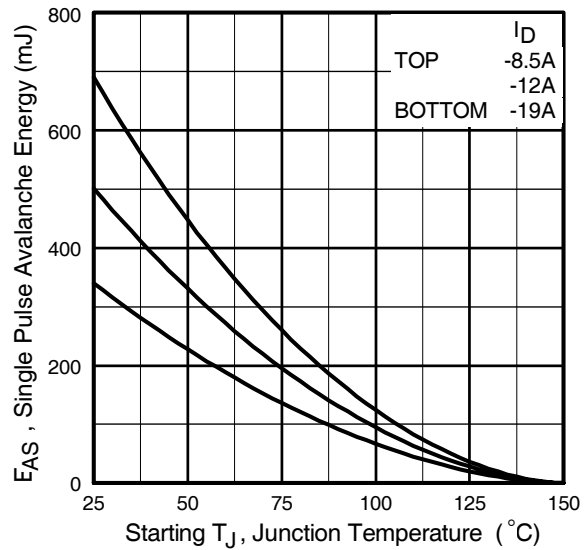


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

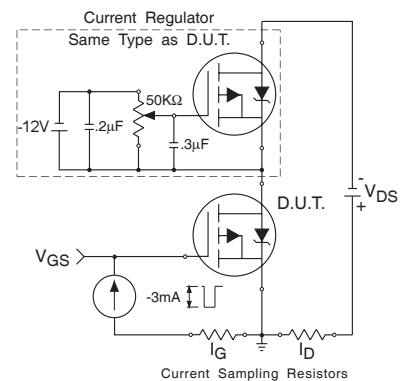
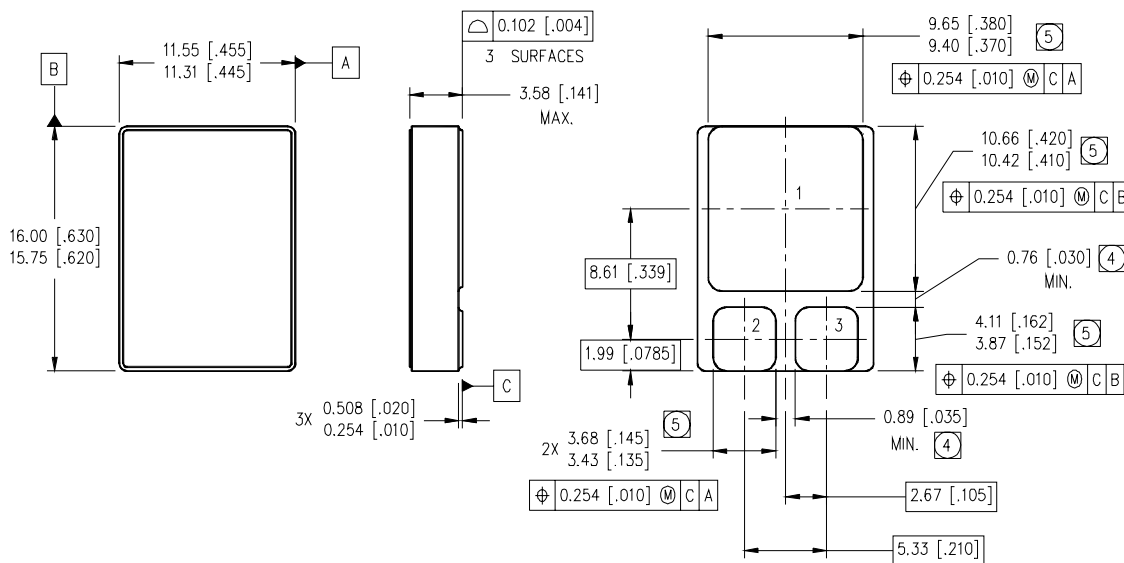


Fig 13b. Gate Charge Test Circuit

Footnotes:

- ① Repetitive Rating; Pulse width limited by maximum junction temperature.
- ② $V_{DD} = -25\text{ V}$, Starting $T_J = 25^\circ\text{C}$, $L = 1.9\text{mH}$
Peak $I_{AS} = -19\text{A}$, $V_{GS} = -10\text{V}$, $R_G = 25\Omega$
- ③ $I_{SD} \leq -19\text{A}$, $di/dt \leq -390\text{ A}/\mu\text{s}$,
 $V_{DD} \leq -100\text{V}$, $T_J \leq 150^\circ\text{C}$
- ④ Pulse width $\leq 300\text{ }\mu\text{s}$; Duty Cycle $\leq 2\%$

Case Outline and Dimensions — SMD-1



NOTES:

- 1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- 2. CONTROLLING DIMENSION: INCH.
- 3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
- ④ DIMENSION INCLUDES METALLIZATION FLASH.
- ⑤ DIMENSION DOES NOT INCLUDE METALLIZATION FLASH.

PAD ASSIGNMENTS

- 1 = DRAIN
- 2 = GATE
- 3 = SOURCE