

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 = -1.0mA
ΔBV _{DSS} /ΔT _J	Temperature Coefficient of Breakdown Voltage	—	-0.1	—	V/°C	Reference to 25°C, I _D = -1.0mA
R _{DS(on)}	Static Drain-to-Source On-State Resistance	—	—	0.30	Ω	V _{GS} = -10V, I _D = -7.1A ④
V _{GS(th)}	Gate Threshold Voltage	-2.0	—	-4.0	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	2.5	—	—	S	V _{DS} > -15V, I _{DS} = -7.1A ④
I _{DSS}	Zero Gate Voltage Drain Current	—	—	-25	μA	V _{DS} = -80V, V _{GS} = 0V
		—	—	-250		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		V _{GS} = 20V
Q _g	Total Gate Charge	—	—	30	nC	V _{GS} = -10V, I _D = -11.2A V _{DS} = -50V
Q _{gs}	Gate-to-Source Charge	—	—	7.1		
Q _{gd}	Gate-to-Drain ('Miller') Charge	—	—	21		
t _{d(on)}	Turn-On Delay Time	—	—	60	ns	V _{DD} = -50V, I _D = -11.2A, V _{GS} = -10V, R _G = 7.5Ω
t _r	Rise Time	—	—	140		
t _{d(off)}	Turn-Off Delay Time	—	—	140		
t _f	Fall Time	—	—	140		
L _S + L _D	Total Inductance	—	6.8	—	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C _{iss}	Input Capacitance	—	800	—	pF	V _{GS} = 0V, V _{DS} = -25V f = 1.0MHz
C _{oss}	Output Capacitance	—	350	—		
C _{rss}	Reverse Transfer Capacitance	—	125	—		

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-11.2	A	T _J = 25°C, I _S = -11.2A, V _{GS} = 0V ④
I _{SM}	Pulse Source Current (Body Diode) ①	—	—	-44		
V _{SD}	Diode Forward Voltage	—	—	-4.7	V	T _J = 25°C, I _S = -11.2A, V _{GS} = 0V ④
t _{rr}	Reverse Recovery Time	—	—	250	nS	T _J = 25°C, I _F = -11.2A, di/dt ≤ -100A/μs
Q _{RR}	Reverse Recovery Charge	—	—	3.0	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	—	—	1.67	°C/W	
R _{thCS}	Case-to-sink	—	0.21	—		
R _{thJA}	Junction-to-Ambient	—	—	80		Typical socket mount

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

For footnotes refer to the last page

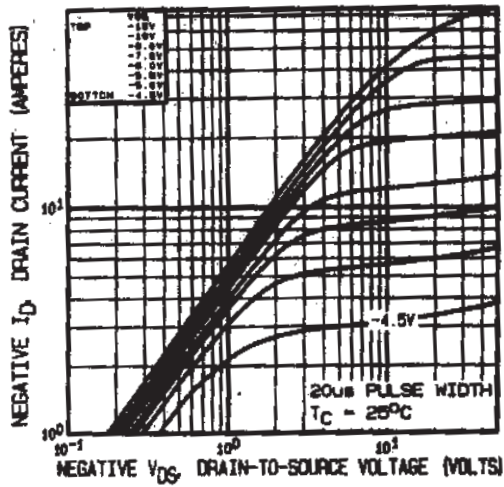


Fig 1. Typical Output Characteristics

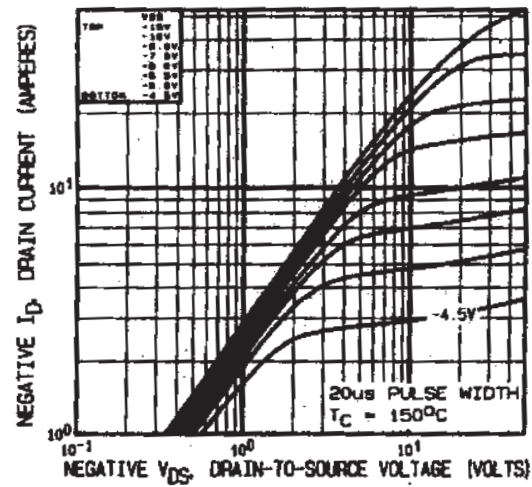


Fig 2. Typical Output Characteristics

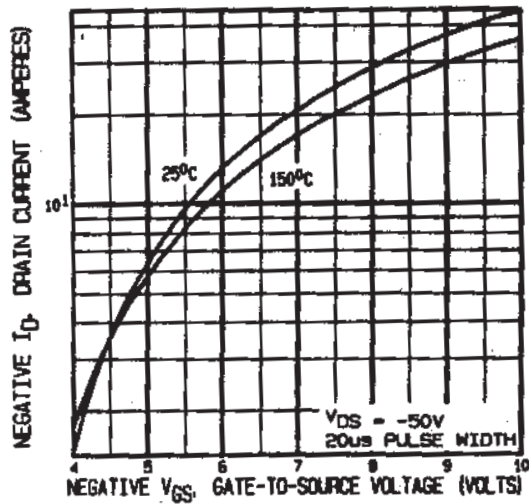


Fig 3. Typical Transfer Characteristics

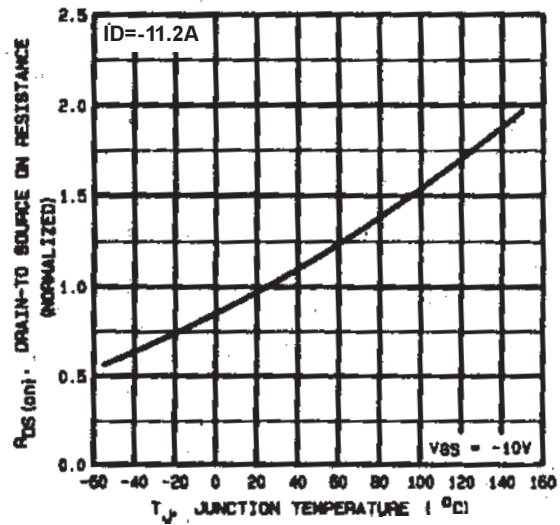


Fig 4. Normalized On-Resistance
Vs. Temperature

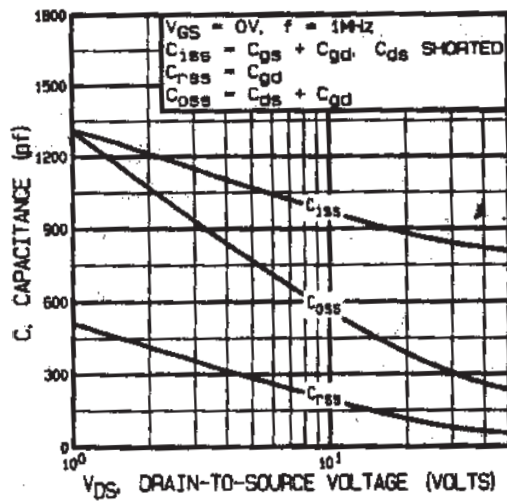
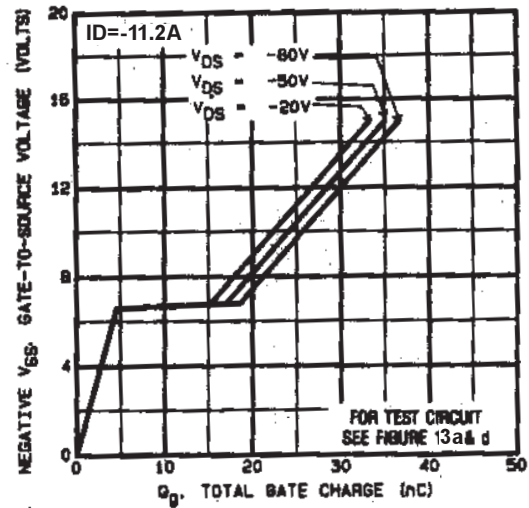
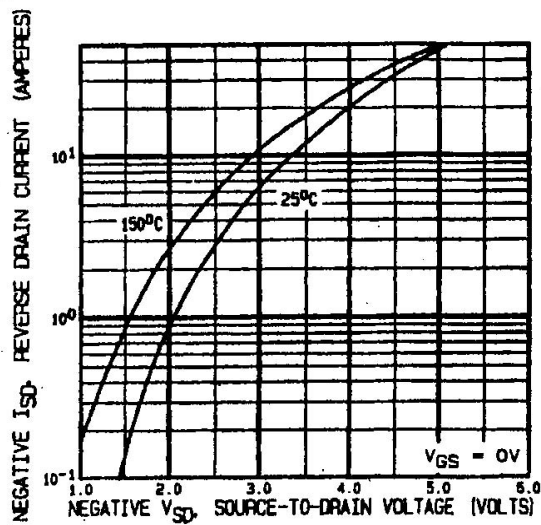
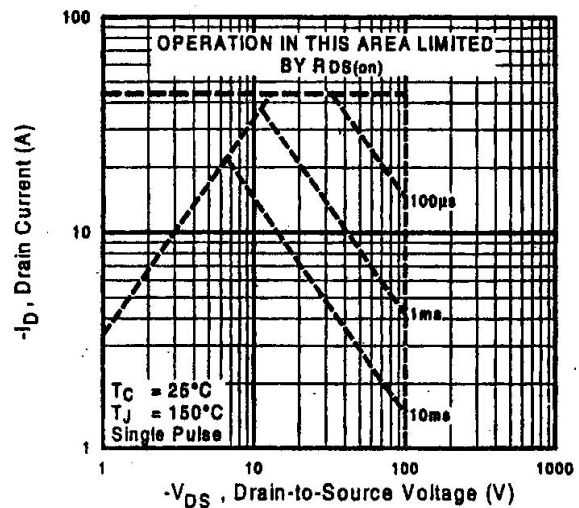
Fig 5. Typical Capacitance Vs.
Drain-to-Source VoltageFig 6. Typical Gate Charge Vs.
Gate-to-Source VoltageFig 7. Typical Source-Drain Diode
Forward Voltage

Fig 8. Maximum Safe Operating Area

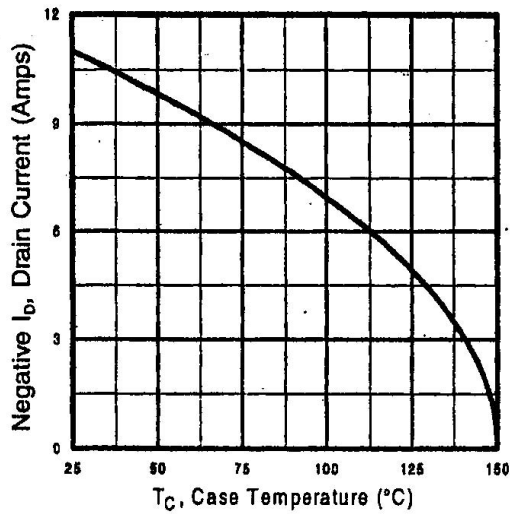


Fig 9. Maximum Drain Current Vs. Case Temperature

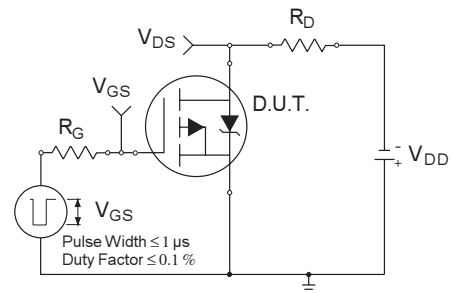


Fig 10a. Switching Time Test Circuit

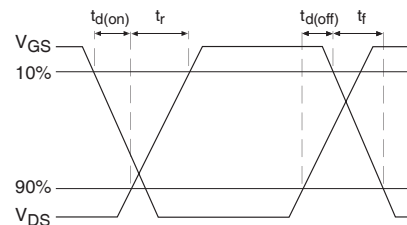


Fig 10b. Switching Time Waveforms

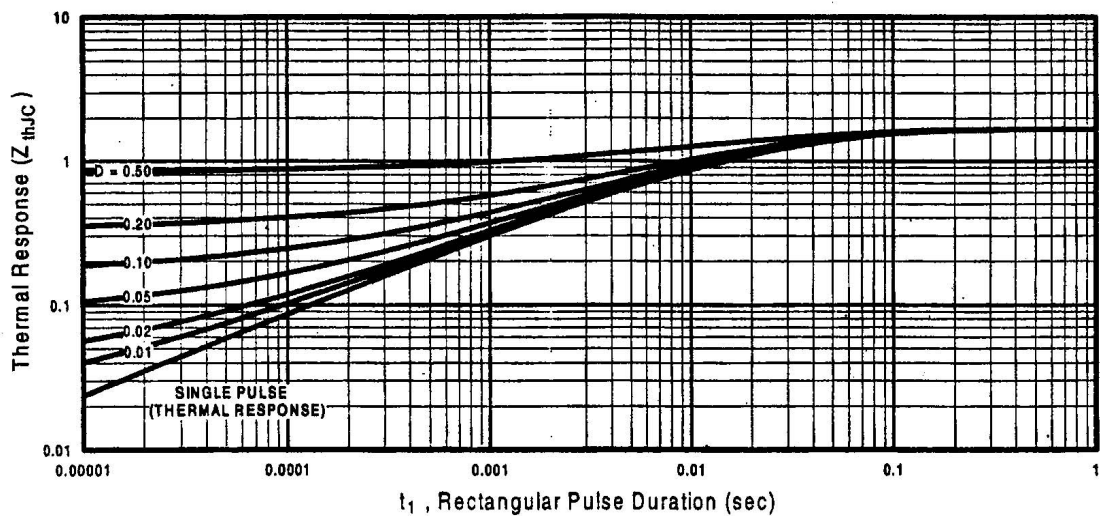


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

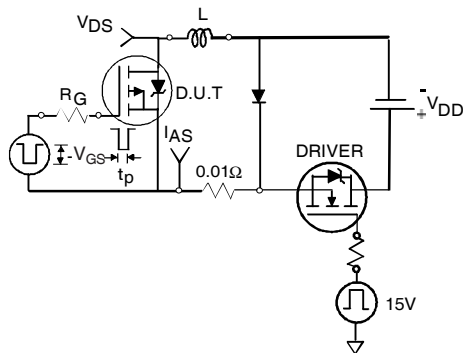


Fig 12a. Unclamped Inductive Test Circuit

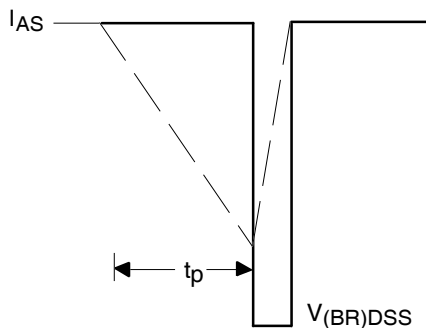


Fig 12b. Unclamped Inductive Waveforms

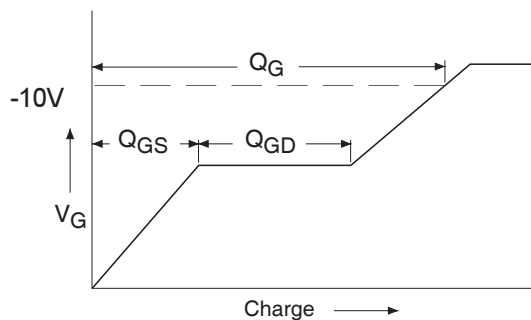


Fig 13a. Basic Gate Charge Waveform

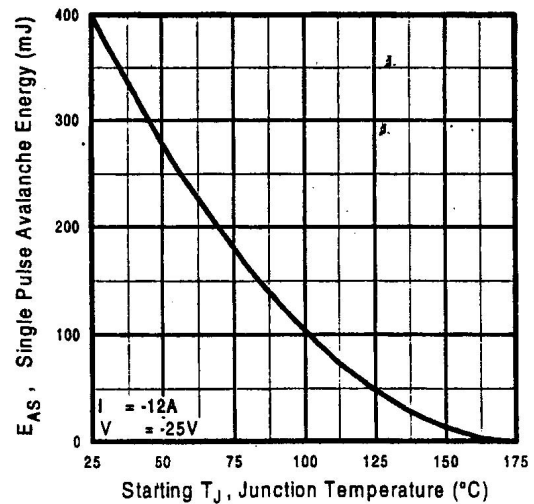


Fig 12c. Maximum Avalanche Energy
Vs. Drain Current

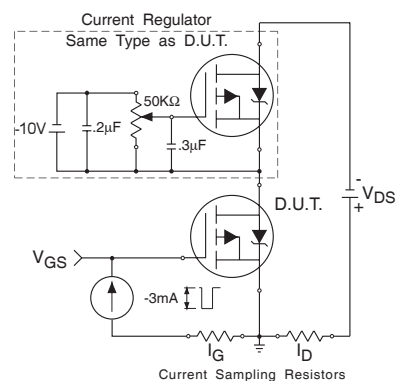
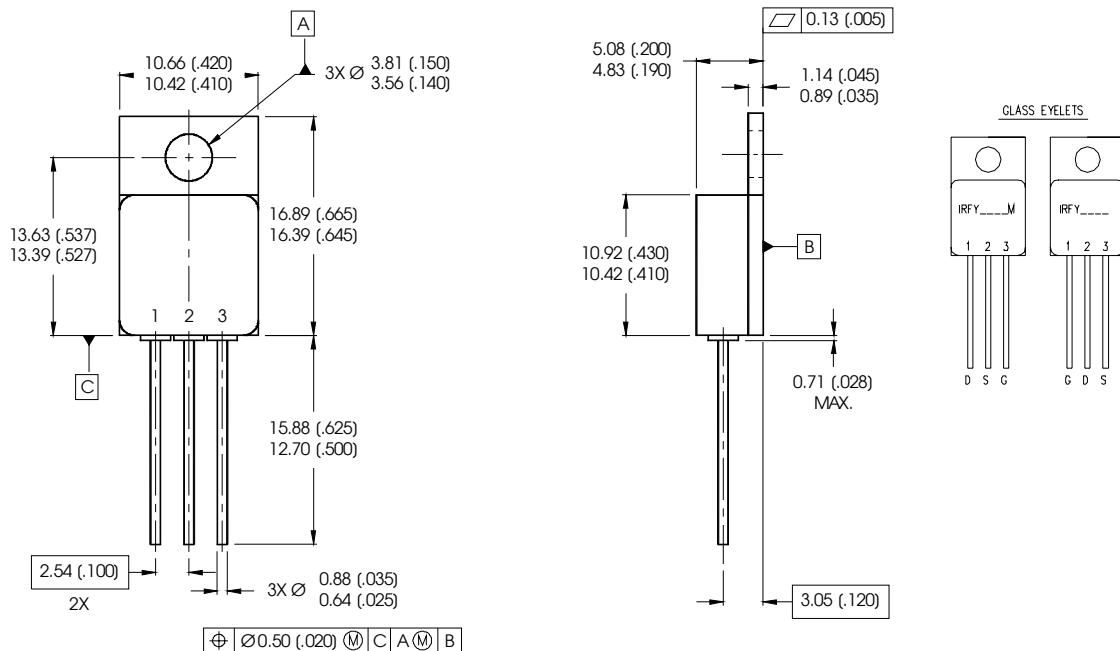


Fig 13b. Gate Charge Test Circuit

Foot Notes:

- ① Repetitive Rating; Pulse width limited by maximum junction temperature.
- ② $V_{DD} = -25V$, starting $T_J = 25^\circ C$, $L = 6.4mH$
Peak $I_L = -11.2A$, $V_{GS} = -10V$
- ③ $I_{SD} \leq -11.2A$, $di/dt \leq -140A/\mu s$,
 $V_{DD} \leq -100V$, $T_J \leq 150^\circ C$
- ④ Pulse width $\leq 300 \mu s$; Duty Cycle $\leq 2\%$

Case Outline and Dimensions — TO-257AA



NOTES:

1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1994.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE TO-257AA.

LEGEND

- D - DRAIN
- S - SOURCE
- G - GATE