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

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	-55	——	——	V	V_{GS} = 0V, I_D = -250µA
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	-0.053	——	V/°C	Reference to 25°C, I_D = -1.0mA
$R_{DS(on)}$	Static Drain-to-Source On-State Resistance	——	——	0.03	Ω	V_{GS} = -10V, I_D = -35A ④
$V_{GS(th)}$	Gate Threshold Voltage	-2.0	——	-4.0	V	V_{DS} = V_{GS}, I_D = -250µA
Gfs	Forward Transconductance	18	——	——	S	V_{DS} = -25V, I_D = -35A ④
I_{DSS}	Zero Gate Voltage Drain Current	——	——	-25	µA	V_{DS} = -55V, V_{GS} = 0V
		——	——	-250		V_{DS} = -44V,V_{GS} = 0V,T_J =125°C
I_{GSS}	Gate-to-Source Leakage Forward	——	——	-100	nA	V_{GS} = -20V
	Gate-to-Source Leakage Reverse	——	——	100		V_{GS} = 20V
Q_G	Total Gate Charge	——	——	195	nC	I_D = -35A
Q_{GS}	Gate-to-Source Charge	——	——	45		V_{DS} = -44V
Q_{GD}	Gate-to-Drain ('Miller') Charge	——	——	75		V_{GS} = -10V
$t_{d(on)}$	Turn-On Delay Time	——	——	35	ns	V_{DD} = -28V
tr	Rise Time	——	——	165		I_D = -35A
$t_{d(off)}$	Turn-Off Delay Time	——	——	95		R_G = 2.5Ω
t_f	Fall Time	——	——	130		V_{GS} = -10V
Ls +L_D	Total Inductance	——	6.8	——	nH	Measured from Drain lead (6mm / 0.25 in from package) to Source lead (6mm/ 0.25 in from package) with Source wire internally bonded from Source pin to Drain pad
C_{iss}	Input Capacitance	——	3570	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	1310	——		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	——	505	——		f = 1.0MHz

Source-Drain Diode Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	——	——	-35*	A	
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	-140		
V_{SD}	Diode Forward Voltage	——	——	-1.6	V	T_J = 25°C,I_S = -35A, V_{GS} = 0V④
t_{rr}	Reverse Recovery Time	——	——	120	ns	T_J = 25°C, I_F = -35A, V_{DD} ≤ - 30V
Q_{rr}	Reverse Recovery Charge	——	——	365	nC	di/dt = 100A/µs ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

* Current is limited by package

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	——	——	1.0	°C/W
$R_{\theta CS}$	Case -to-Sink	——	0.21	——	
$R_{\theta JA}$	Junction-to-Ambient (Typical socket mount)	——	——	48	

Footnotes:

① Repetitive Rating; Pulse width limited by maximum junction temperature.

② V_{DD} = -25V, starting T_J = 25°C, L = 0.8mH, Peak I_L = -35A, V_{GS} = -10V,R_G = 25Ω.

③ I_{SD} ≤ -35A, di/dt ≤ -230A/µs, V_{DD} ≤ -55V, T_J ≤ 150°C

④ Pulse width ≤ 300 µs; Duty Cycle ≤ 2%.

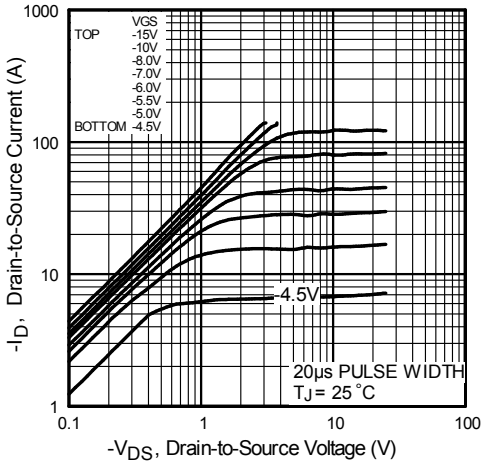


Fig 1. Typical Output Characteristics

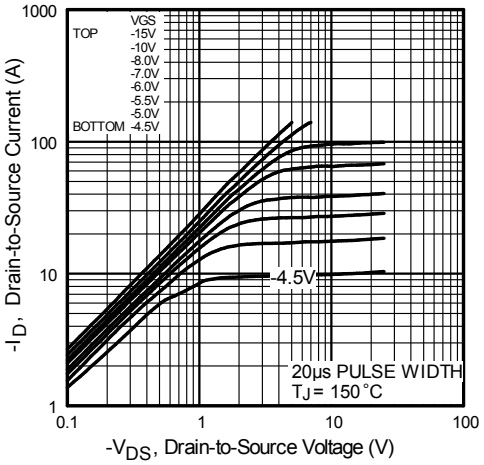


Fig 2. Typical Output Characteristics

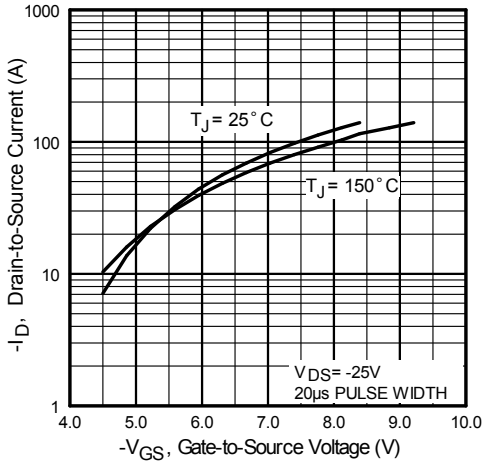


Fig 3. Typical Transfer Characteristics

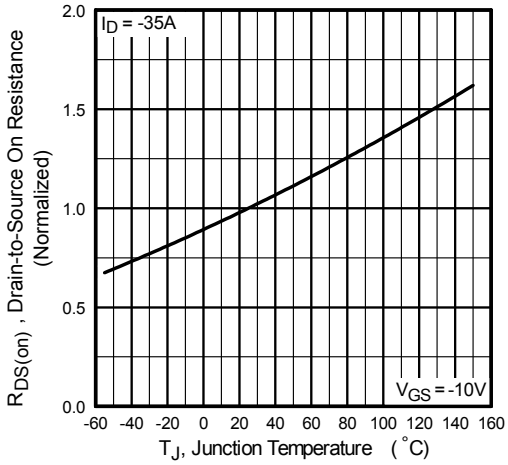


Fig 4. Normalized On-Resistance Vs. Temperature

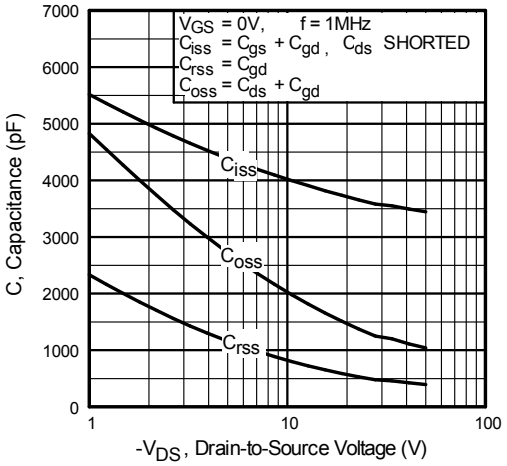


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

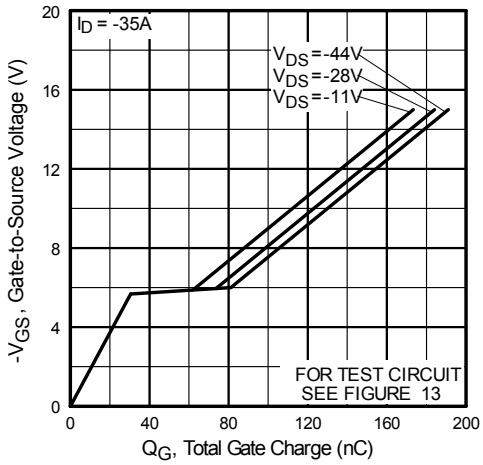


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

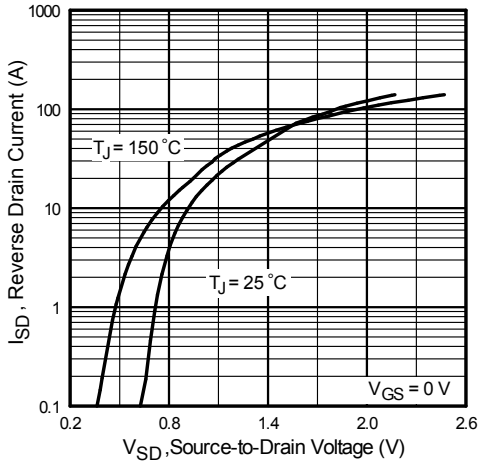


Fig 7. Typical Source-Drain Diode Forward Voltage

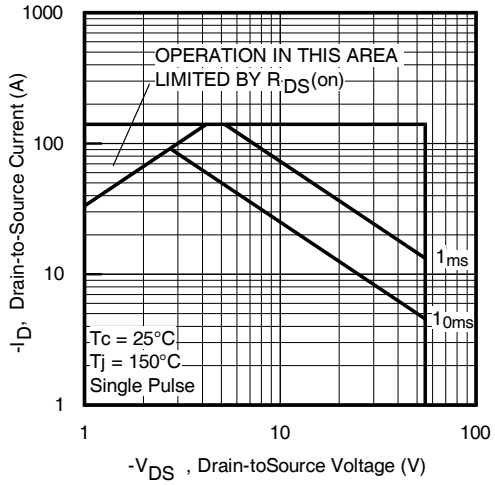


Fig 8. Maximum Safe Operating Area

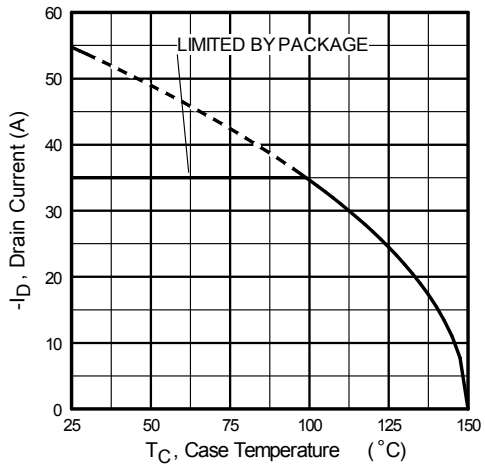


Fig 9. Maximum Drain Current Vs. Case Temperature

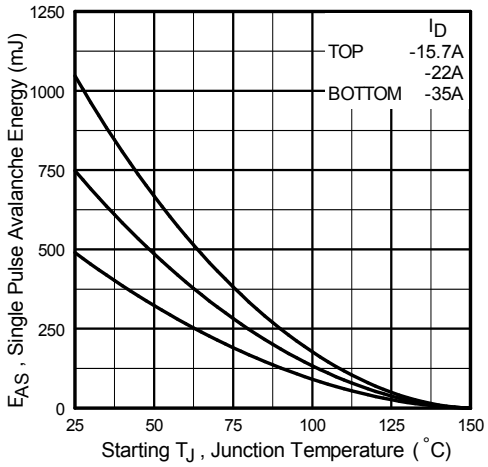


Fig 10. Maximum Avalanche Energy Vs. Drain Current

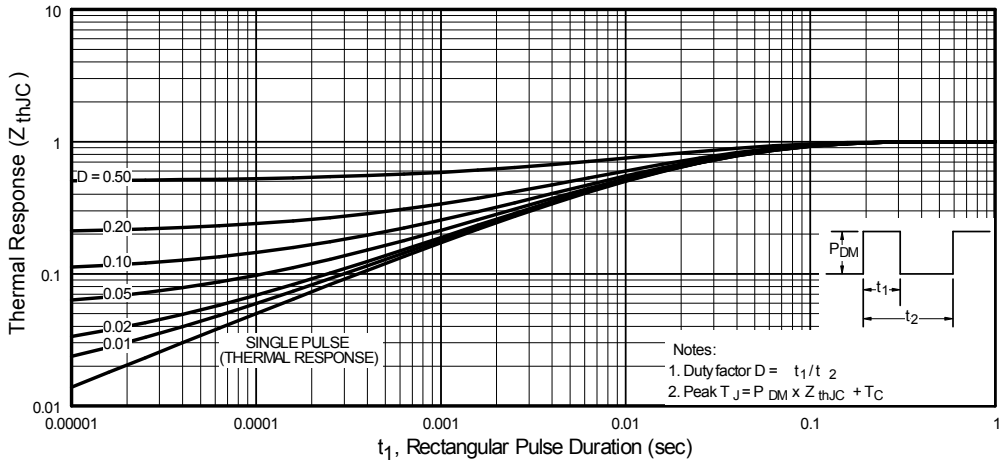


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

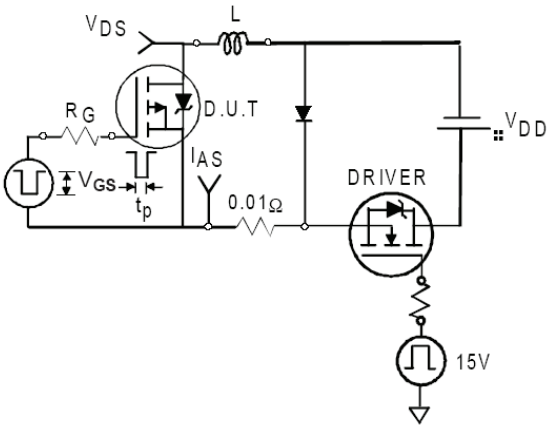


Fig 12a. Unclamped Inductive Test Circuit

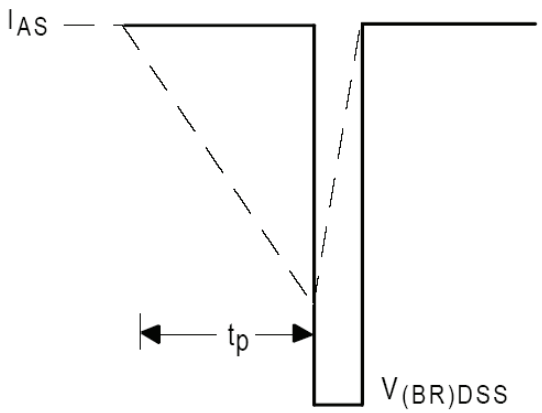


Fig 12b. Unclamped Inductive Waveforms

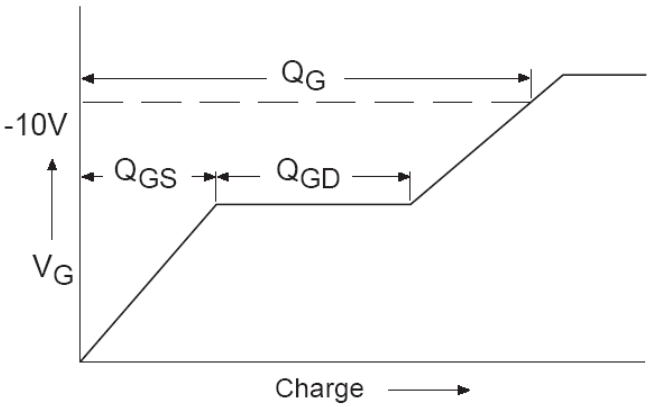


Fig 13a. Basic Gate Charge Waveform

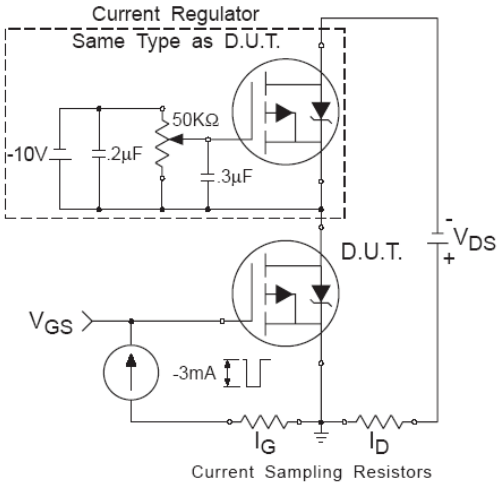


Fig 13b. Gate Charge Test Circuit

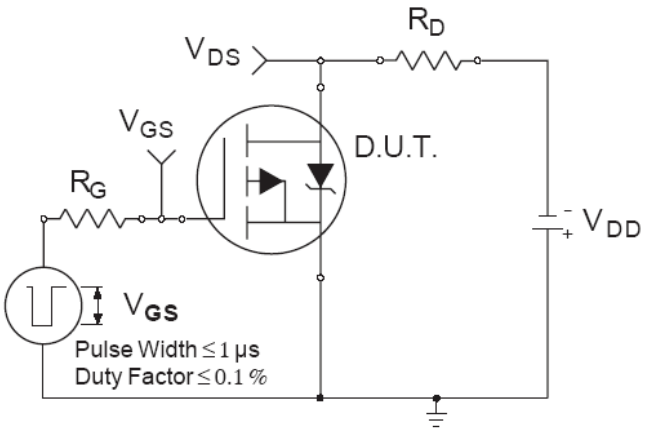


Fig 14a. Switching Time Test Circuit

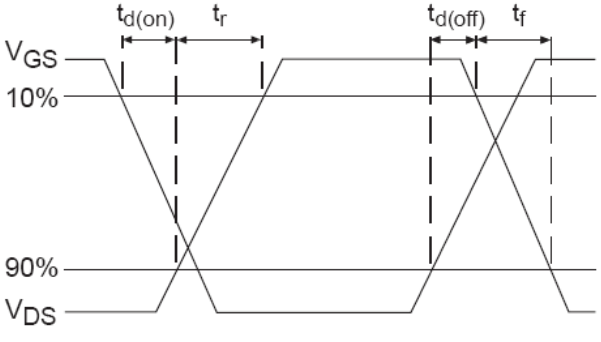
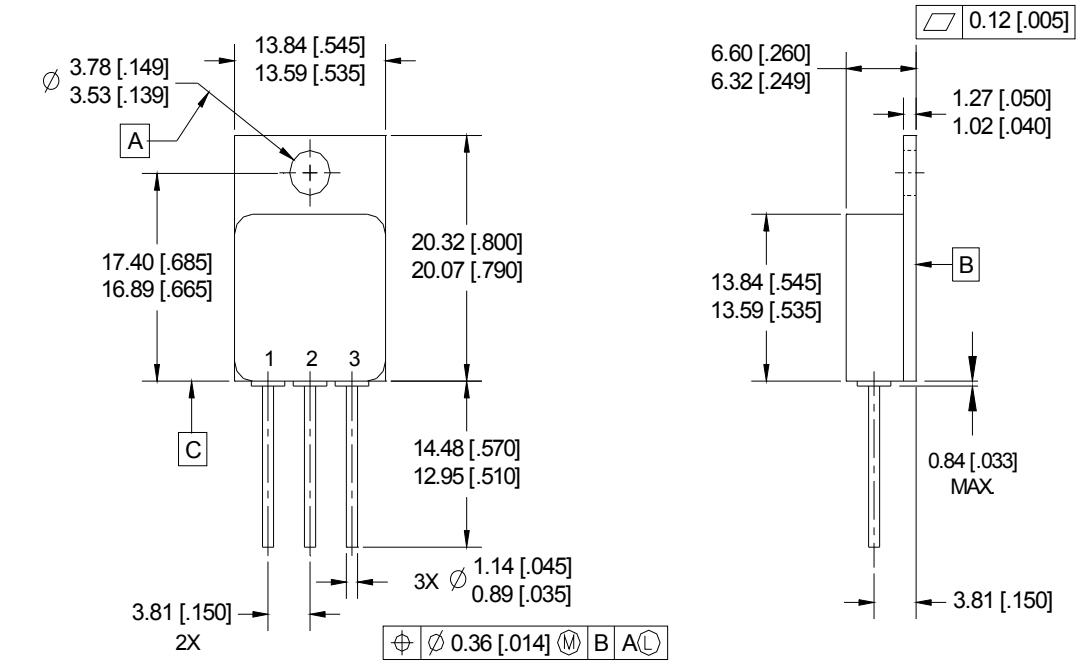


Fig 14b. Switching Time Waveforms

Case Outline and Dimensions — TO-254AA



NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. CONTROLLING DIMENSION: INCH.
4. CONFORMS TO JEDEC OUTLINE TO-254AA.

PIN ASSIGNMENTS

1 = DRAIN
2 = SOURCE
3 = GATE

BERYLLIA WARNING PER MIL-PRF-19500

Package containing beryllia shall not be ground, sandblasted, machined, or have other operations performed on them which will produce beryllia or beryllium dust. Furthermore, beryllium oxide packages shall not be placed in acids that will produce fumes containing beryllium.

An Infineon Technologies Company

IR HiRel Headquarters: 101 N. Sepulveda Blvd., El Segundo, California 90245, USA Tel: (310) 252-7105
IR HiRel Leominster: 205 Crawford St., Leominster, Massachusetts 01453, USA Tel: (978) 534-5776
IR HiRel San Jose: 2520 Junction Avenue, San Jose, California 95134, USA Tel: (408) 434-5000
Data and specifications subject to change without notice.

IMPORTANT NOTICE

The information given in this document shall be in no event regarded as guarantee of conditions or characteristic. The data contained herein is a characterization of the component based on internal standards and is intended to demonstrate and provide guidance for typical part performance. It will require further evaluation, qualification and analysis to determine suitability in the application environment to confirm compliance to your system requirements.

With respect to any example hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind including without limitation warranties on non- infringement of intellectual property rights and any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's product and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of any customer's technical departments to evaluate the suitability of the product for the intended applications and the completeness of the product information given in this document with respect to applications.

For further information on the product, technology, delivery terms and conditions and prices, please contact your local sales representative or go to (www.infineon.com/hirel).

WARNING

Due to technical requirements products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.