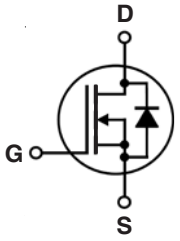
IXYS

High Voltage Depletion Mode Power MOSFET

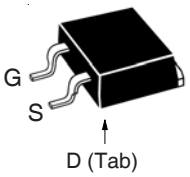
IXTA1R6N100D2HV

V_{DSX} = 1000V
$I_{D(on)}$ ≥ 1.6A
$R_{DS(on)}$ ≤ 10Ω

N-Channel



TO-263HV (IXTA..HV)



G = Gate D = Drain
S = Source Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSX}	T_J = 25°C to 150°C	1000	V
V_{GSX}	Continuous	±20	V
V_{GSM}	Transient	±30	V
P_D	T_C = 25°C	100	W
T_J		- 55 ... +150	°C
T_{JM}		150	°C
T_{stg}		- 55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
M_d	Mounting Force	10..65 / 2.2..14.6	N/lb
Weight		2.5	g

Features

- High Voltage package
- High Blocking Voltage
- Normally ON Mode
- International Standard Package
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Audio Amplifiers
- Start-Up Circuits
- Protection Circuits
- Ramp Generators
- Current Regulators
- Active Loads

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSX}	V_{GS} = - 5V, I_D = 250μA	1000			V
$V_{GS(off)}$	V_{DS} = 25V, I_D = 100μA	- 2.5		- 4.5	V
I_{GSX}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
$I_{DSX(off)}$	V_{DS} = V_{DSX}, V_{GS} = - 5V			2	μA
	T_J = 125°C			25	μA
$R_{DS(on)}$	V_{GS} = 0V, I_D = 0.8A, Note 1			10	Ω
$I_{D(on)}$	V_{GS} = 0V, V_{DS} = 50V, Note 1	1.6			A

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 30V, I_D = 0.8A, Note 1	0.65	1.10		S
C_{iss}	V_{GS} = -10V, V_{DS} = 25V, f = 1MHz		645		pF
C_{oss}			43		pF
C_{rss}			11		pF
$t_{d(on)}$	**Resistive Switching Times**		27		ns
t_r	V_{GS} = ±5V, V_{DS} = 500V, I_D = 0.8A		65		ns
$t_{d(off)}$	R_G = 5Ω (External)		34		ns
t_f			41		ns
$Q_{g(on)}$	V_{GS} = 5V, V_{DS} = 500V, I_D = 0.8A		27.0		nC
Q_{gs}			1.6		nC
Q_{gd}			13.5		nC
R_{thJC}				1.25	°C/W

Safe-Operating-Area Specification

Symbol	Test Conditions	Characteristic Values Min.	Typ.	Max.	
SOA	V_{DS} = 800V, I_D = 75mA, T_C = 75°C, Tp = 5s	60			W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_{SD}	I_F = 1.6A, V_{GS} = -10V, Note 1		0.8	1.3	V
t_{rr}	I_F = 1.6A, -di/dt = 100A/μs		970		ns
I_{RM}	V_R = 100V, V_{GS} = -10V		9.96		A
Q_{RM}			4.80		μC

Note 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

Fig. 1. Output Characteristics @ T_J = 25°C

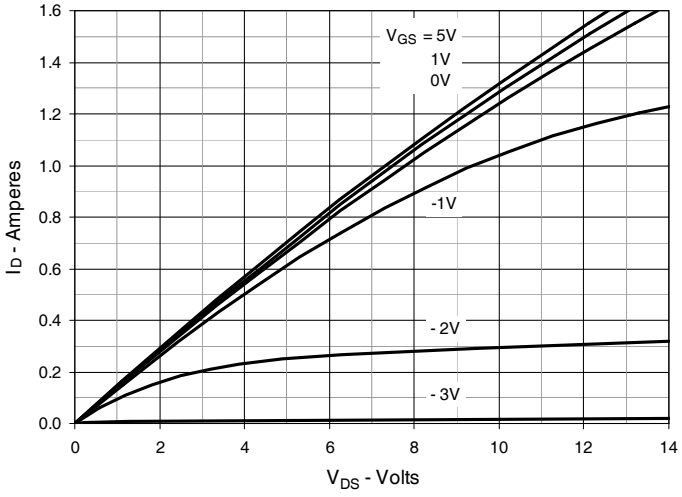


Fig. 2. Extended Output Characteristics @ T_J = 25°C

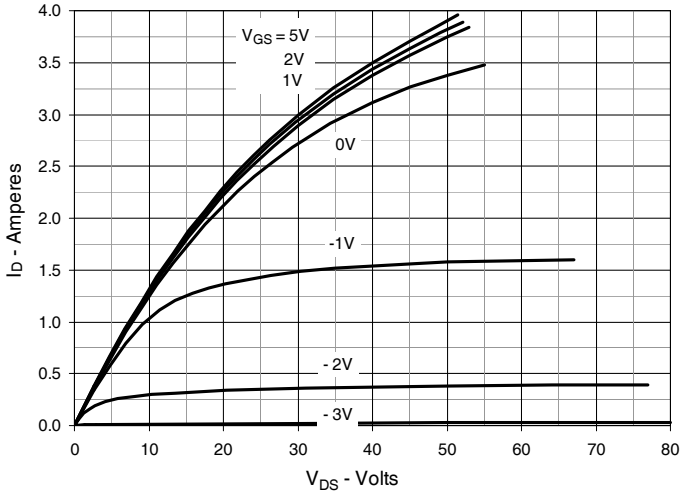


Fig. 3. Output Characteristics @ T_J = 125°C

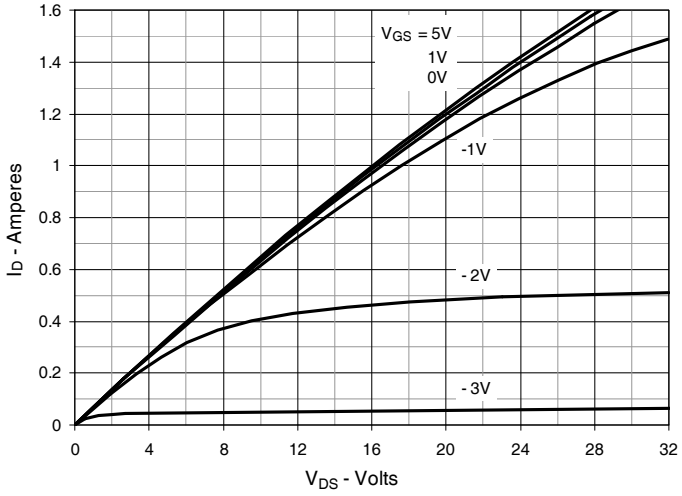


Fig. 4. Drain Current @ T_J = 25°C

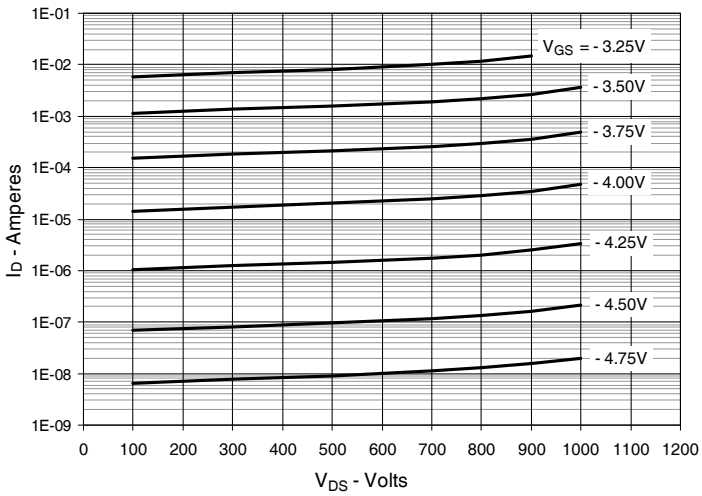


Fig. 5. Drain Current @ T_J = 100°C

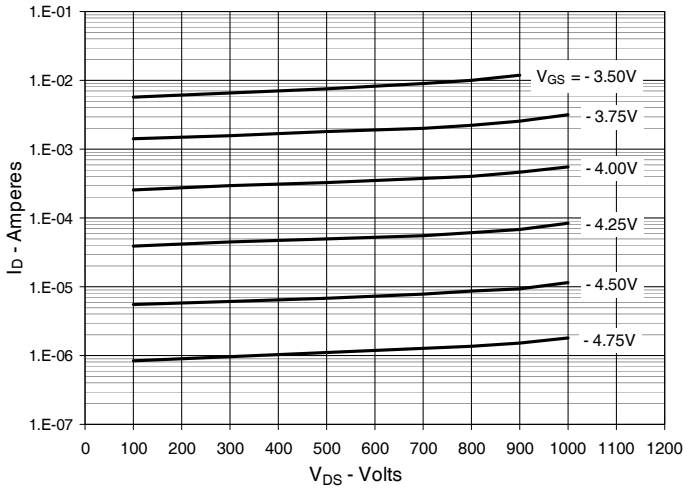


Fig. 6. Dynamic Resistance vs. Gate Voltage

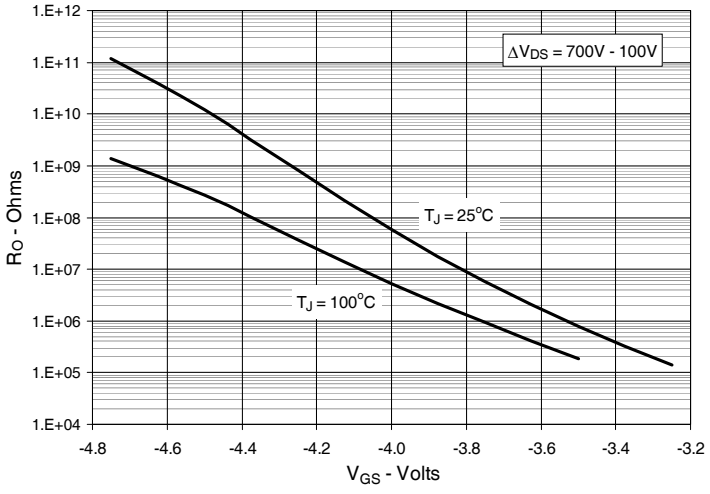


Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

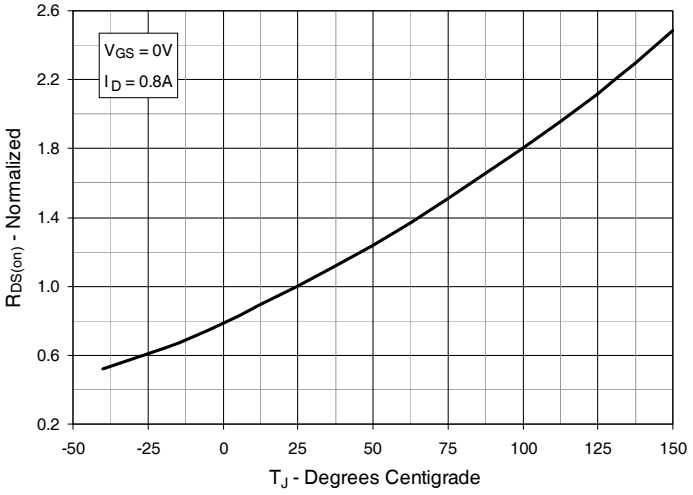


Fig. 8. $R_{DS(on)}$ Normalized to I_D = 0.8A Value vs. Drain Current

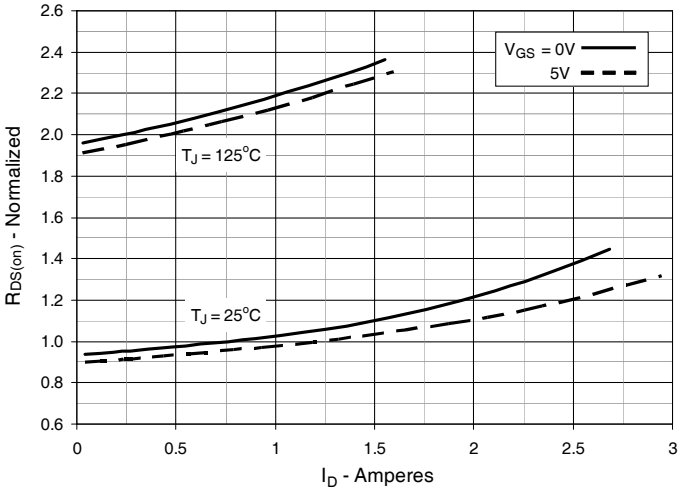


Fig. 9. Input Admittance

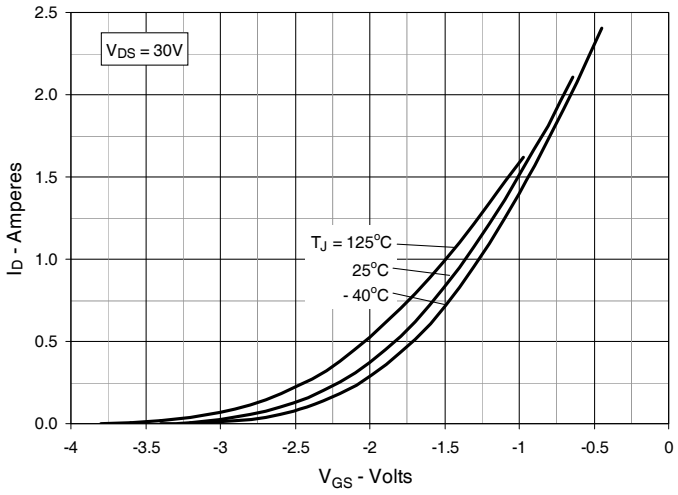


Fig. 10. Transconductance

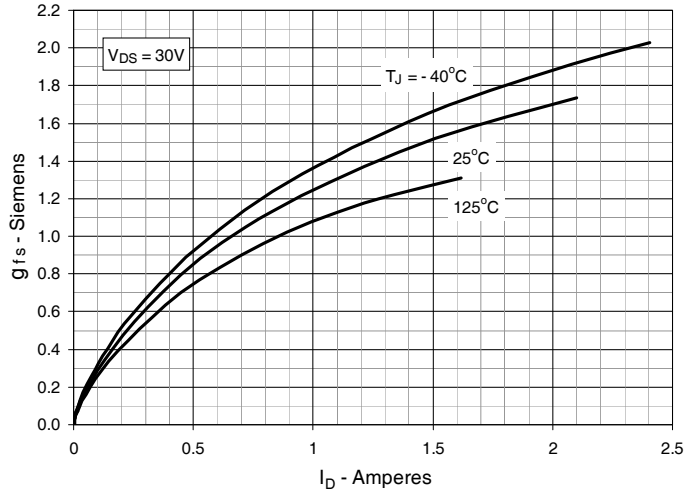


Fig. 11. Breakdown and Threshold Voltages vs. Junction Temperature

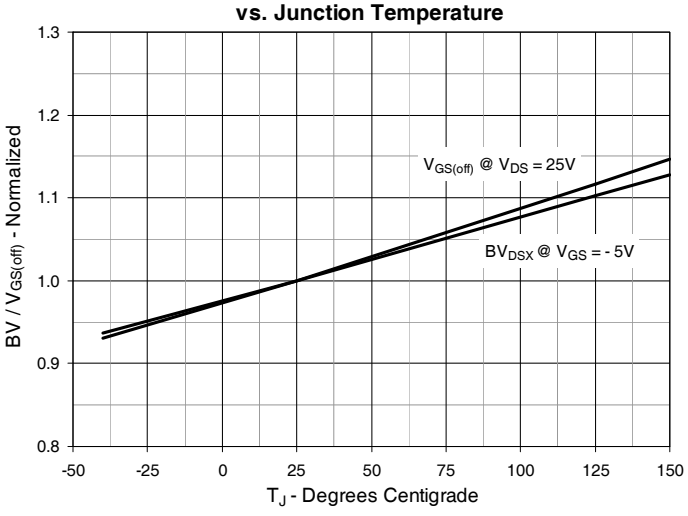


Fig. 12. Forward Voltage Drop of Intrinsic Diode

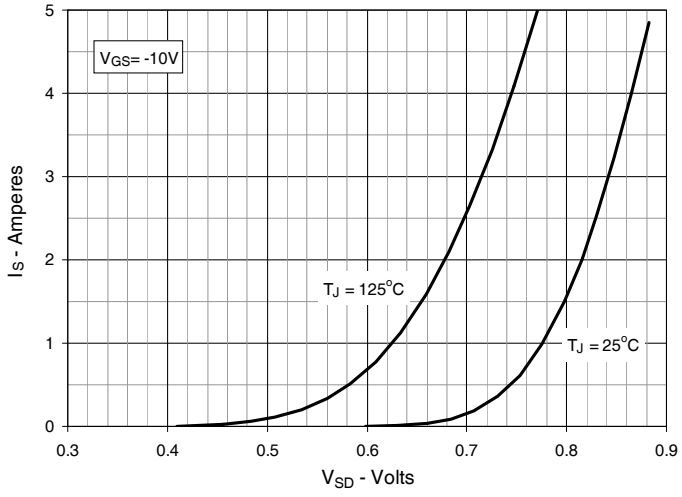


Fig. 13. Capacitance

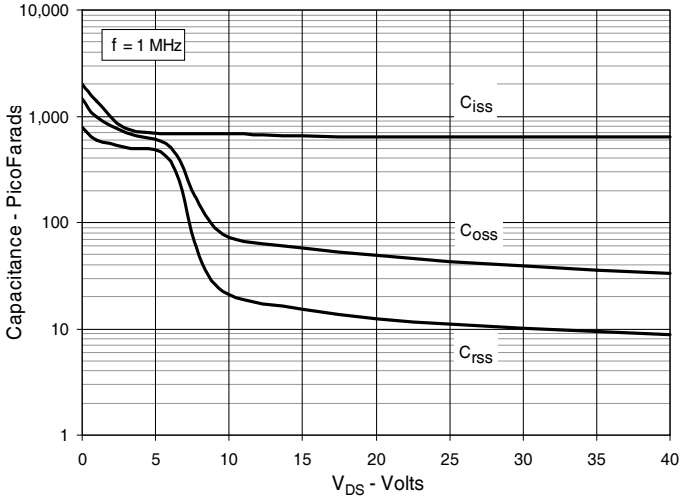


Fig. 14. Gate Charge

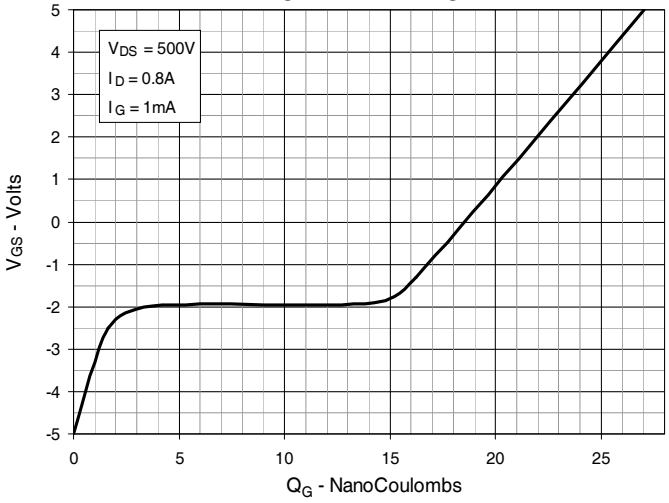


Fig. 15. Forward-Bias Safe Operating Area @ T_C = 25°C

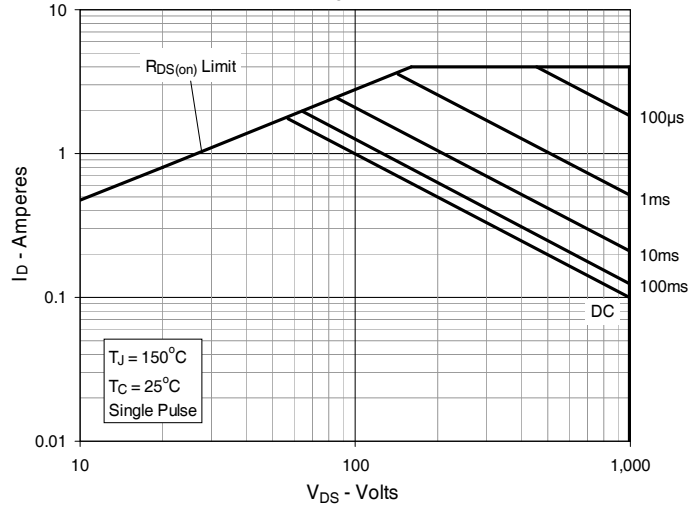


Fig. 16. Forward-Bias Safe Operating Area @ T_C = 75°C

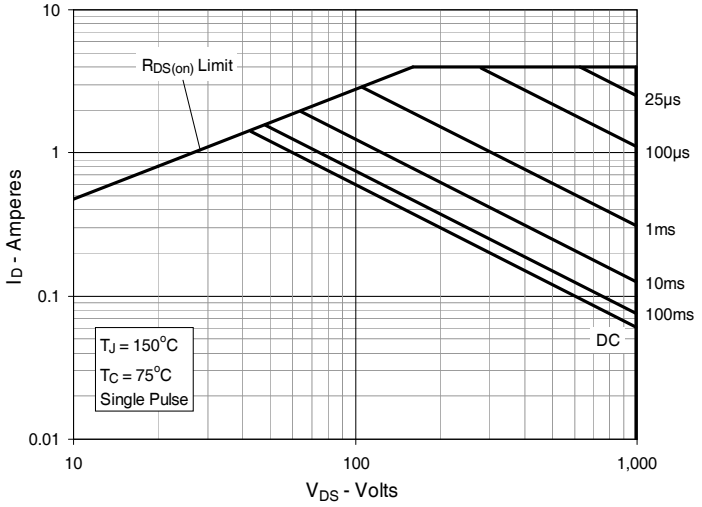
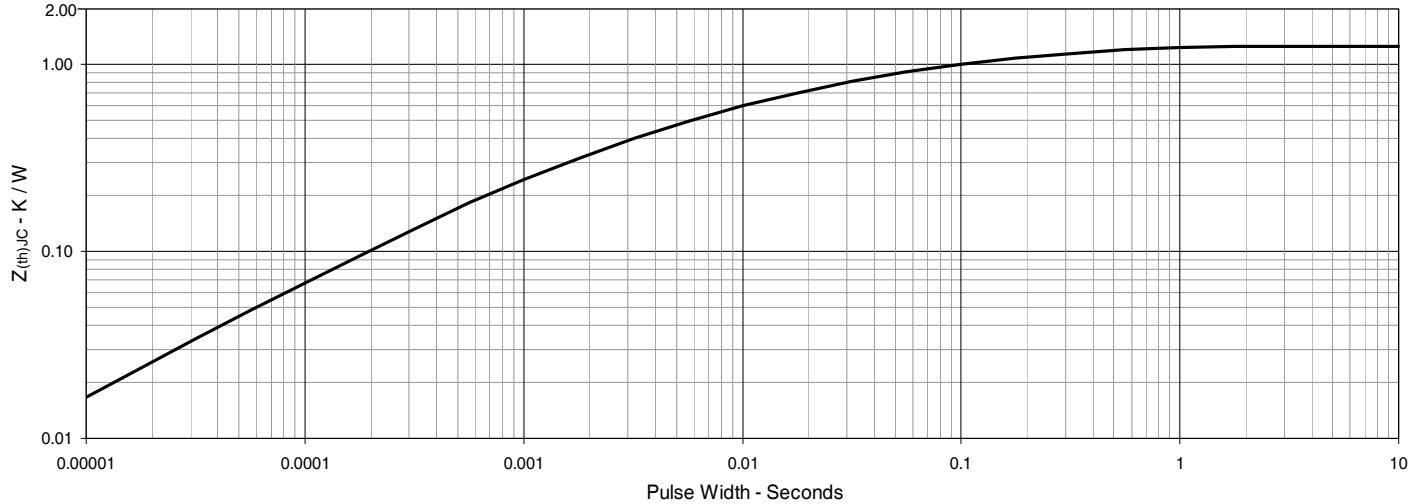
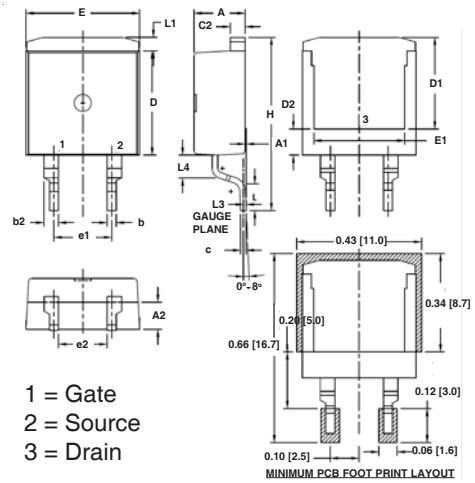


Fig. 17. Maximum Transient Thermal Impedance



TO-263HV Outline



1 = Gate
2 = Source
3 = Drain

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.170	.185	4.30	4.70
A1	.000	.008	0.00	0.20
A2	.091	.098	2.30	2.50
b	.028	.035	0.70	0.90
b2	.046	.054	1.18	1.38
C	.018	.024	0.45	0.60
C2	.049	.055	1.25	1.40
D	.354	.370	9.00	9.40
D1	.311	.327	7.90	8.30
D2	.083	.098	2.10	2.50
E	.386	.402	9.80	10.20
E1	.307	.323	7.80	8.20
e1	.200 BSC		5.08 BSC	
(e2)	.163	.174	4.13	4.43
H	.591	.614	15.00	15.60
L	.079	.102	2.00	2.60
L1	.039	.055	1.00	1.40
L3	.010 BSC		0.254 BSC	
(L4)	.071	.087	1.80	2.20