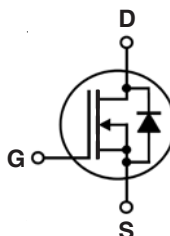


High Voltage Depletion Mode Power MOSFET

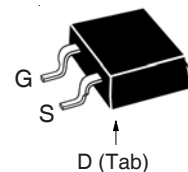
IXTA1R6N100D2HV

$$\begin{aligned} V_{DSX} &= 1000V \\ I_{D(on)} &\geq 1.6A \\ R_{DS(on)} &\leq 10\Omega \end{aligned}$$

N-Channel



TO-263HV
(IXTA..HV)



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

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

Features

- High Voltage package
- High Blocking Voltage
- Normally ON Mode
- International Standard Package
- Molding Epoxies Meet UL94 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 ($T_J = 25^{\circ}\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSX}	$V_{GS} = -5V, I_D = 250\mu\text{A}$	1000		V
$V_{GS(off)}$	$V_{DS} = 25V, I_D = 100\mu\text{A}$	- 2.5		- 4.5 V
I_{GSX}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100 nA
$I_{DSX(off)}$	$V_{DS} = V_{DSX}, V_{GS} = -5V$ $T_J = 125^{\circ}\text{C}$			2 μA 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 ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 30\text{V}$, $I_D = 0.8\text{A}$, Note 1	0.65	1.10	S
C_{iss}	$V_{GS} = -10\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		645	pF
C_{oss}			43	pF
C_{rss}			11	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = \pm 5\text{V}$, $V_{DS} = 500\text{V}$, $I_D = 0.8\text{A}$ $R_G = 5\Omega$ (External)		27	ns
t_r			65	ns
$t_{d(off)}$			34	ns
t_f			41	ns
$Q_{g(on)}$	$V_{GS} = 5\text{V}$, $V_{DS} = 500\text{V}$, $I_D = 0.8\text{A}$		27.0	nC
Q_{gs}			1.6	nC
Q_{gd}			13.5	nC
R_{thJC}				1.25 $^\circ\text{C/W}$

Safe-Operating-Area Specification

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
SOA	$V_{DS} = 800\text{V}$, $I_D = 75\text{mA}$, $T_C = 75^\circ\text{C}$, $T_p = 5\text{s}$	60		W

Source-Drain Diode

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

Note 1. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,860,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

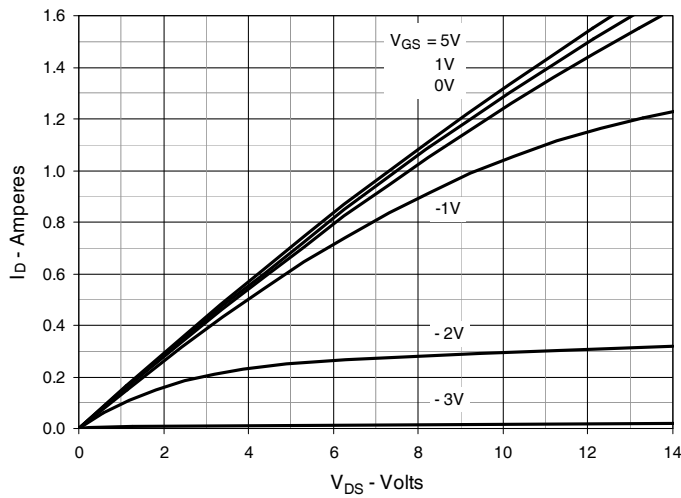
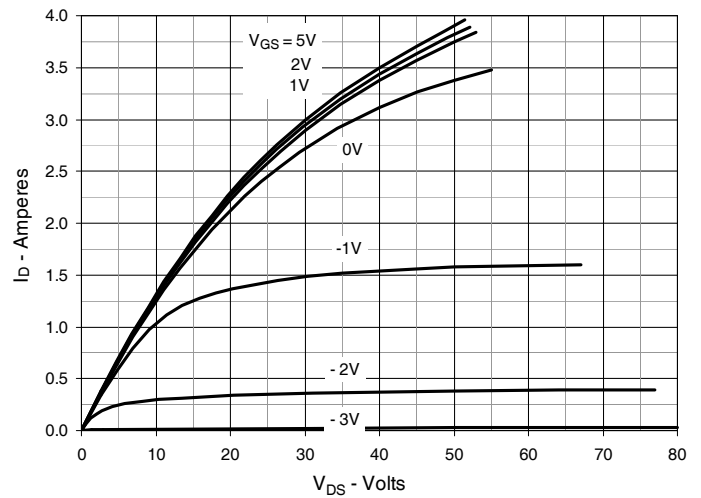
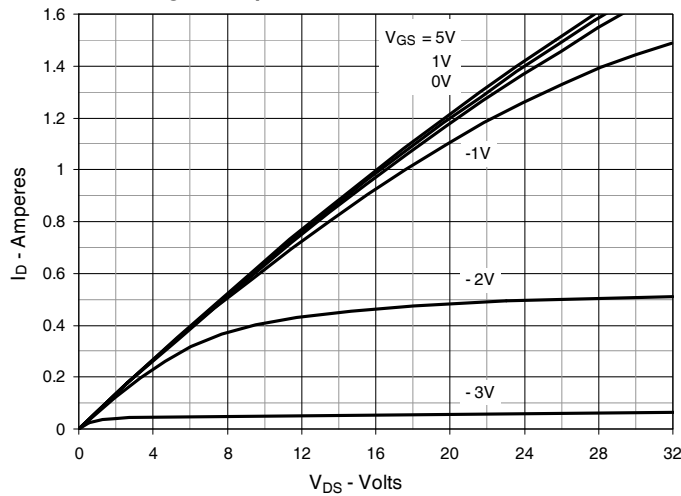
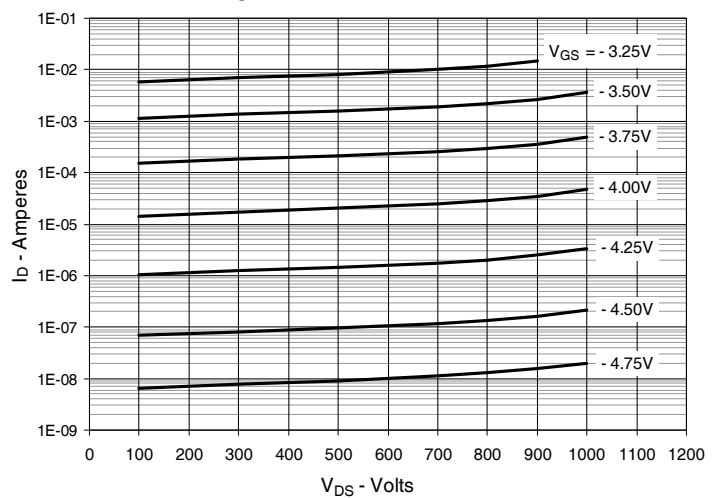
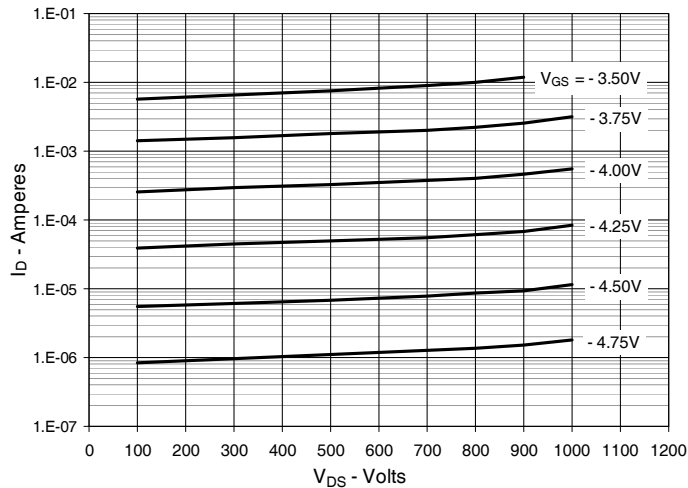
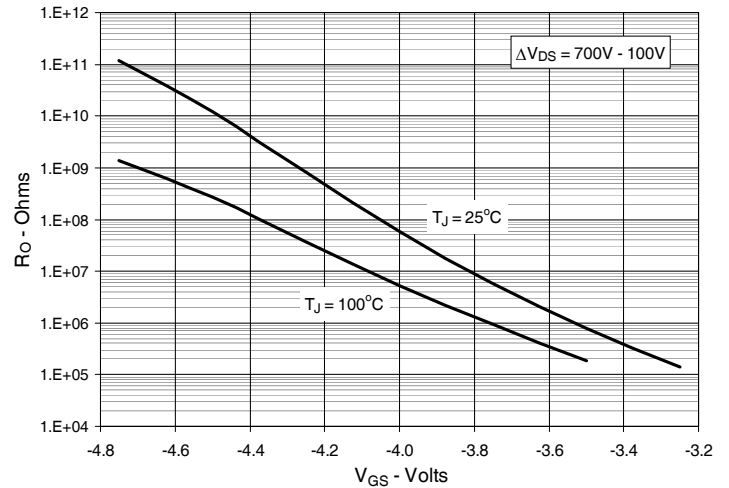
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 4. Drain Current @ $T_J = 25^\circ\text{C}$

Fig. 5. Drain Current @ $T_J = 100^\circ\text{C}$

Fig. 6. Dynamic Resistance vs. Gate Voltage


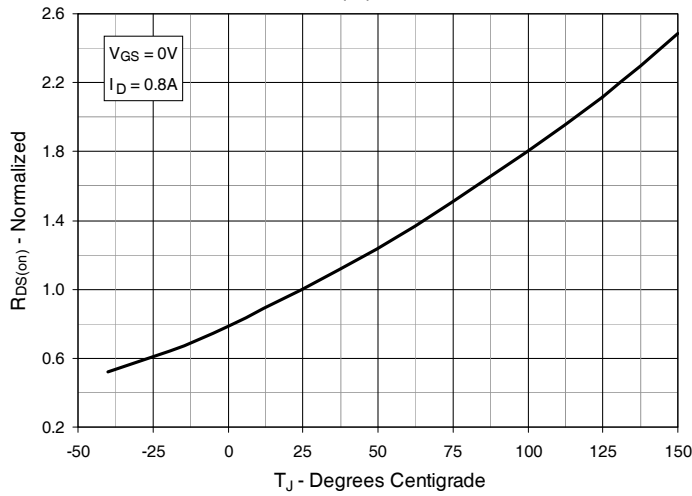
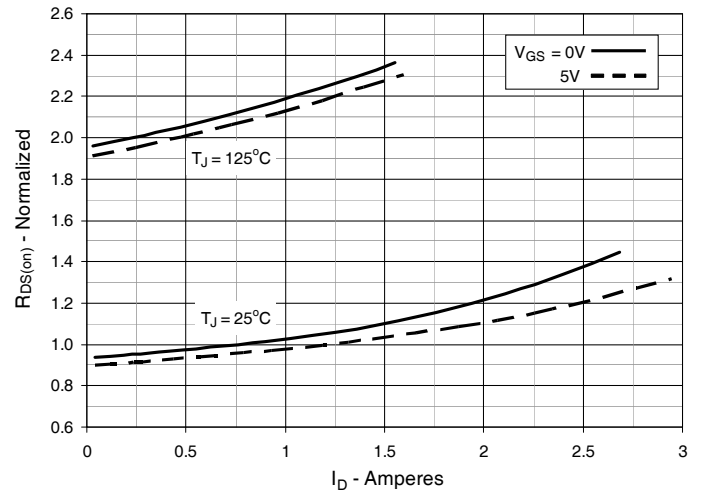
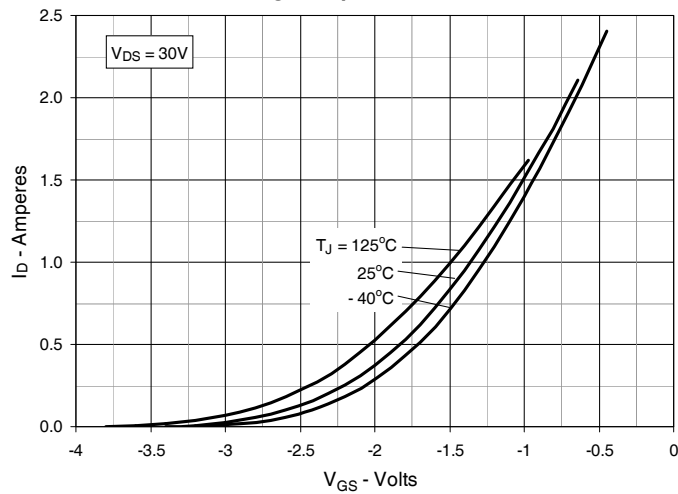
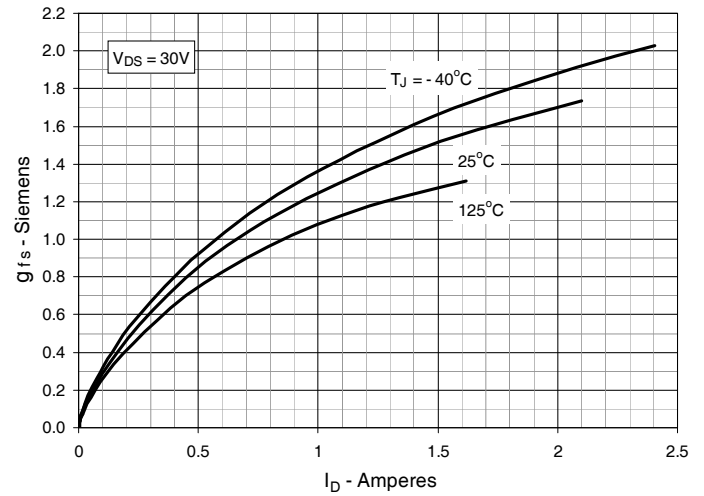
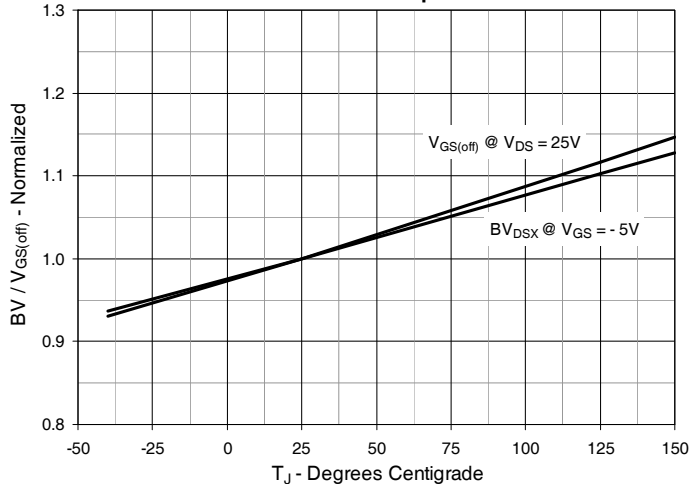
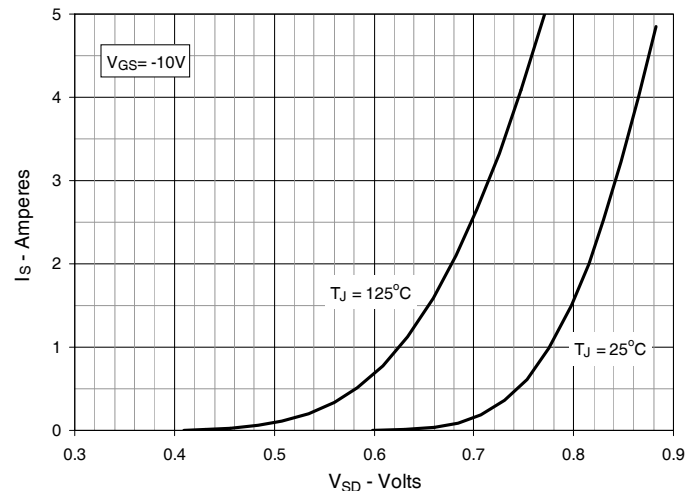
Fig. 7. Normalized $R_{DS(on)}$ vs. Junction Temperature

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

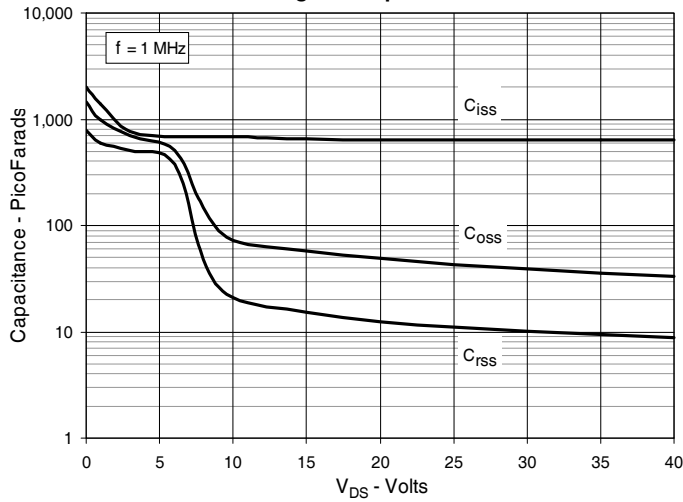


Fig. 14. Gate Charge

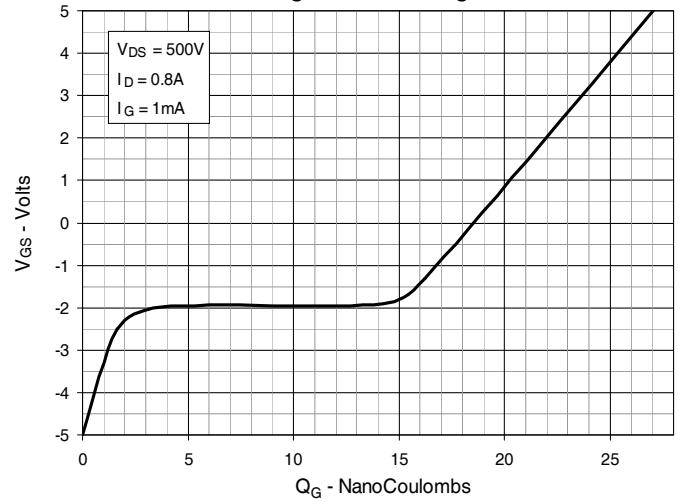


Fig. 15. Forward-Bias Safe Operating Area
@ $T_C = 25^\circ\text{C}$

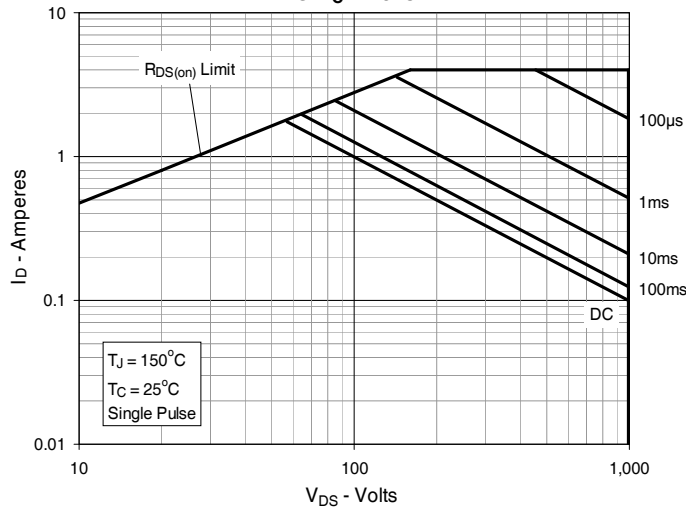


Fig. 16. Forward-Bias Safe Operating Area
@ $T_C = 75^\circ\text{C}$

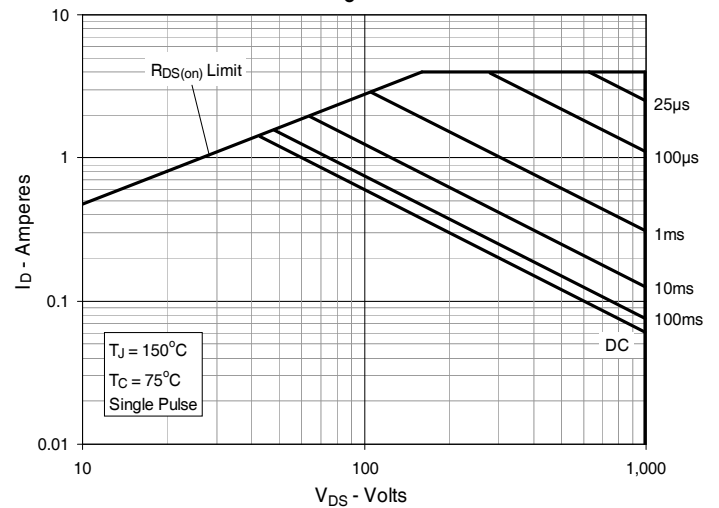
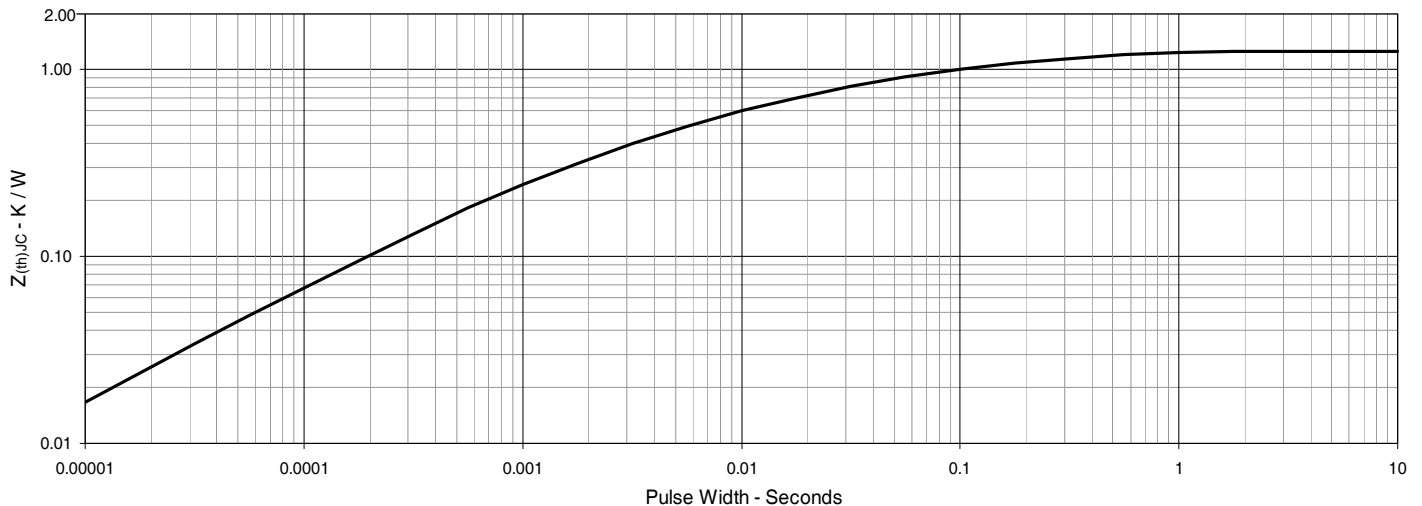
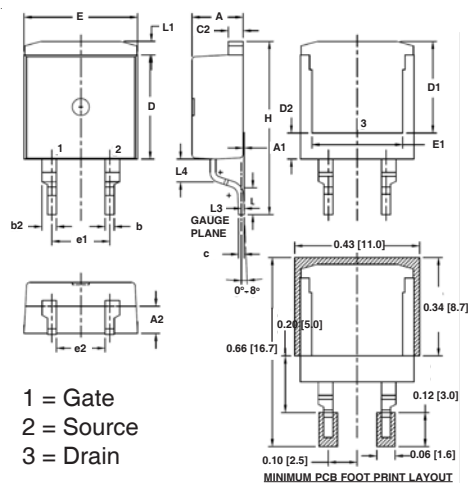


Fig. 17. Maximum Transient Thermal Impedance



TO-263HV Outline



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



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