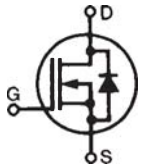
IXYS

Depletion Mode MOSFET

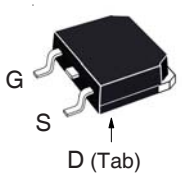
IXTH10N100D
IXTT10N100D

V_{DSX} = 1000V
I_{D25} = 10A
$R_{DS(on)}$ ≤ 1.4Ω

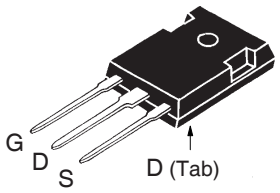
N-Channel



TO-268 (IXTT)



TO-247 (IXTH)



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_{DGX}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1000	V
V_{GSX}	Continuous	±30	V
V_{GSM}	Transient	±40	V
I_{D25}	T_C = 25°C	10	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	20	A
P_D	T_C = 25°C	400	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 Torque (TO-247)	1.13 / 10	Nm/lb.in.
Weight	TO-268	4	g
	TO-247	6	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSX}	V_{GS} = -10V, I_D = 250μA	1000			V
$V_{GS(off)}$	V_{DS} = 25V, I_D = 250μA	-1.5		- 3.5	V
I_{GSX}	V_{GS} = ±30V, V_{DS} = 0V			±100	nA
$I_{DSX(off)}$	V_{DS} = V_{DSX}, V_{GS} = -10V			25	μA
	T_J = 125°C			500	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A, Note 1			1.4	Ω
$I_{D(on)}$	V_{GS} = 0V, V_{DS} = 25V, Note 1		1.0		A

Features

- Normally ON Mode
- International Standard Packages
- Molding Epoxies meet UL 94 V-0 Flammability Classification

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Level Shifting
- Triggers
- Solid State Relays
- Current Regulators
- Active Load

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 30V, I_D = 0.5 • I_{D25}, Note 1	3.0	5.4		S
C_{iss}	V_{GS} = -10V, V_{DS} = 25V, f = 1MHz		2500		pF
C_{oss}			300		pF
C_{rss}			100		pF
$t_{d(on)}$	**Resistive Switching Times**		35		ns
t_r	V_{GS} = -10V, V_{DS} = 0.5 • V_{DSX}, I_D = 0.5 • I_{D25}		85		ns
$t_{d(off)}$	R_G = 4.7Ω (External)		110		ns
t_f			75		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSX}, I_D = 0.5 • I_{D25}		130		nC
Q_{gs}			27		nC
Q_{gd}			58		nC
R_{thJC}				0.31	°C/W
R_{thCS}	TO-247		0.21		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_{SD}	I_F = I_{D25}, V_{GS} = -10V, Note 1		1.1	1.5	V
t_{rr}	I_F = 10A, -di/dt = 100A/μs V_R = 100V, V_{GS} = -10V		850		ns

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

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

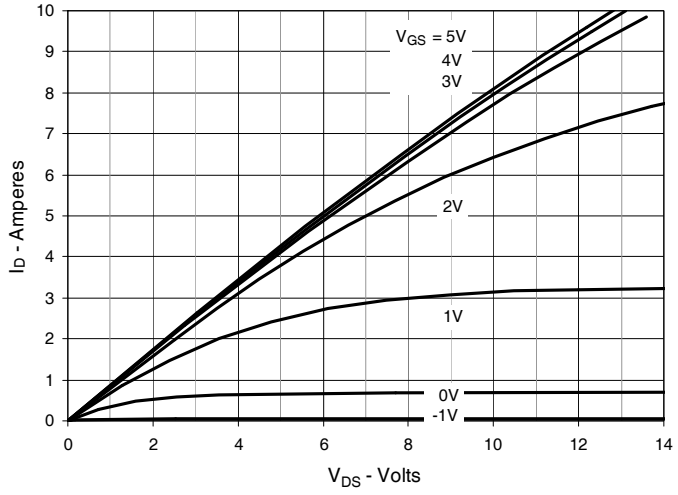


Fig. 2. Extended Output Characteristics @ T_J = 25°C

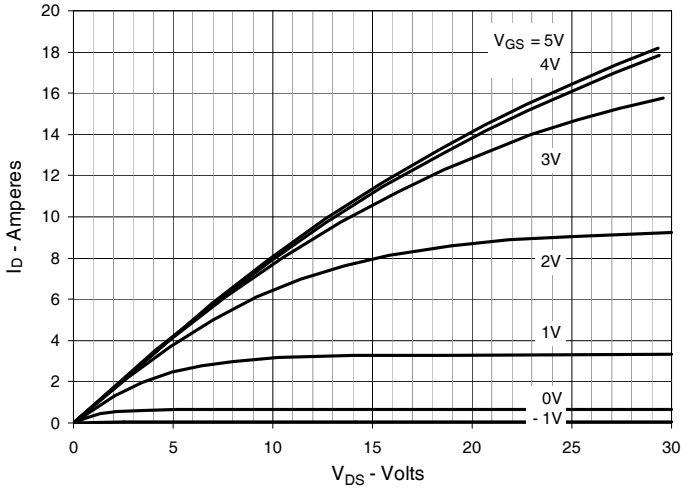


Fig. 3. Output Characteristics @ T_J = 125°C

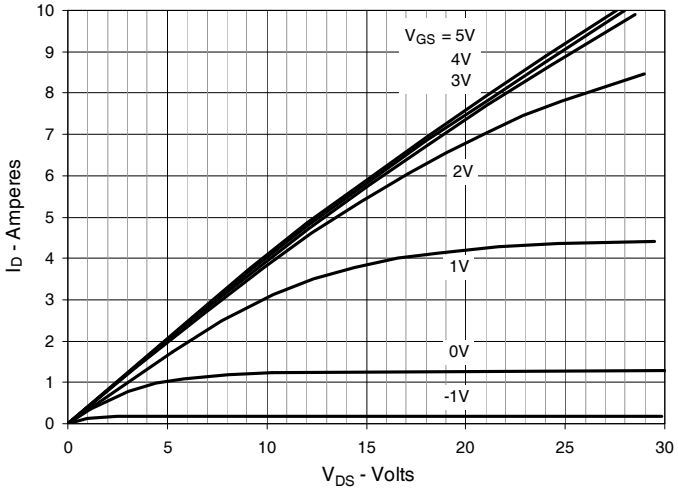


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 5A Value vs. Junction Temperature

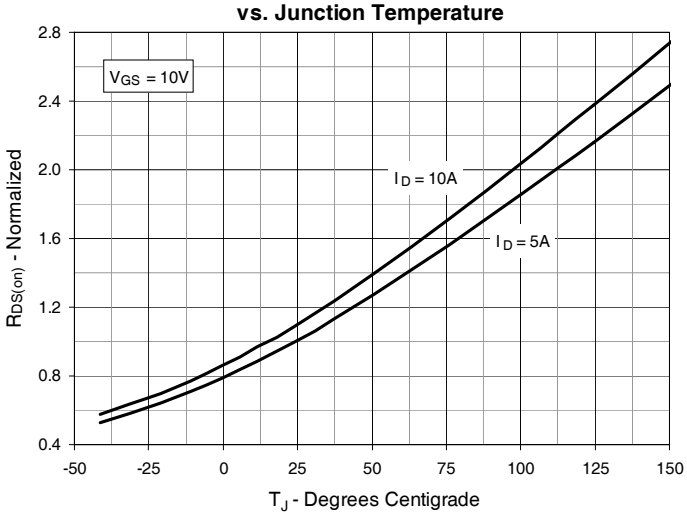


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 5A Value vs. Drain Current

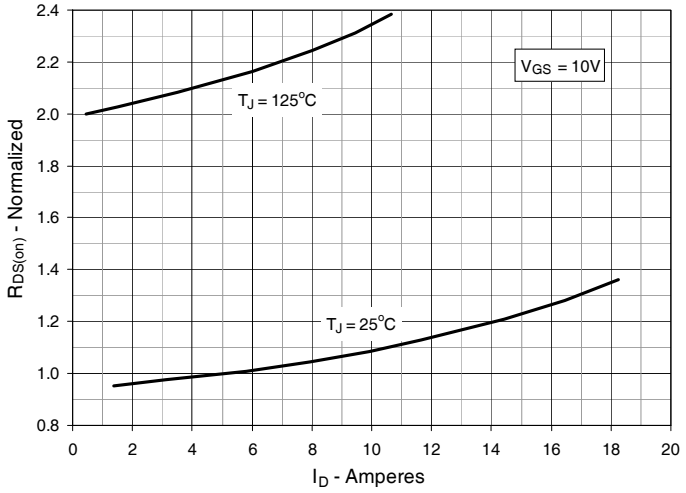


Fig. 6. Maximum Drain Current vs. Case Temperature

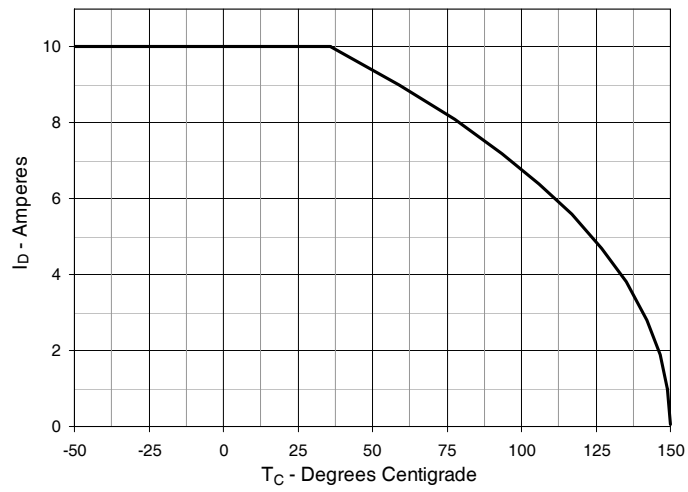


Fig. 7. Input Admittance

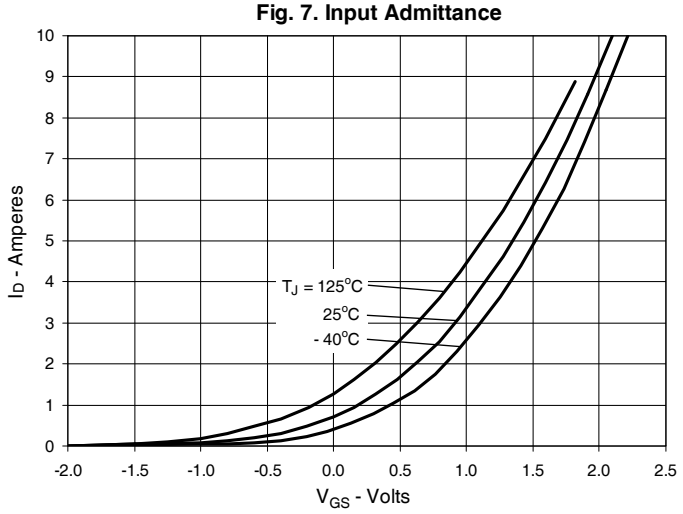


Fig. 8. Transconductance

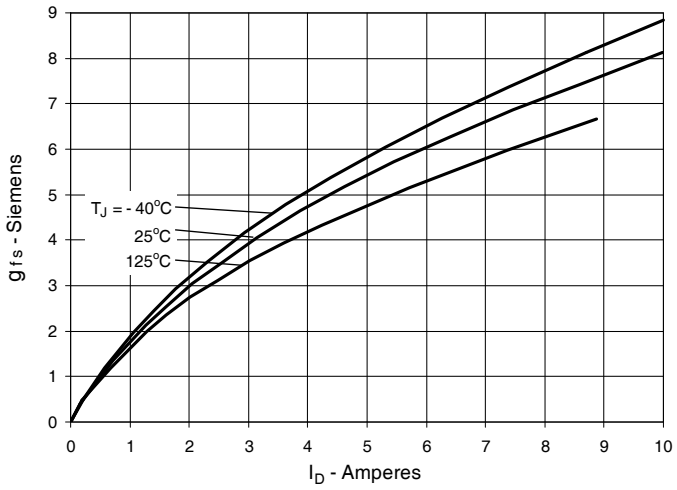


Fig. 9. Forward Voltage Drop of Intrinsic Diode

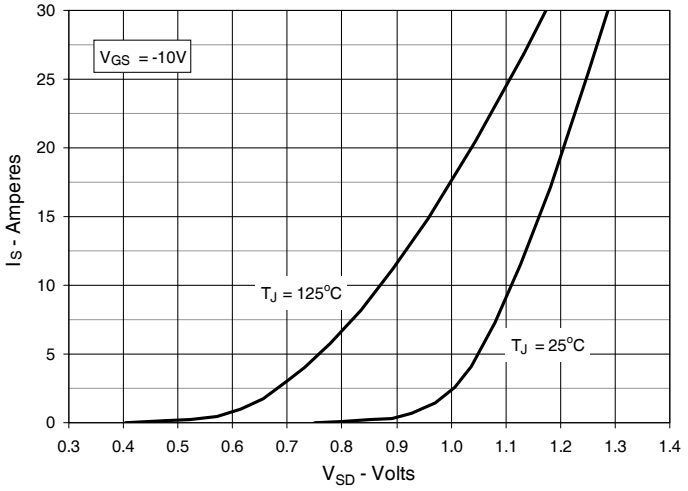


Fig. 10. Breakdown & Threshold Voltages vs. Junction Temperature

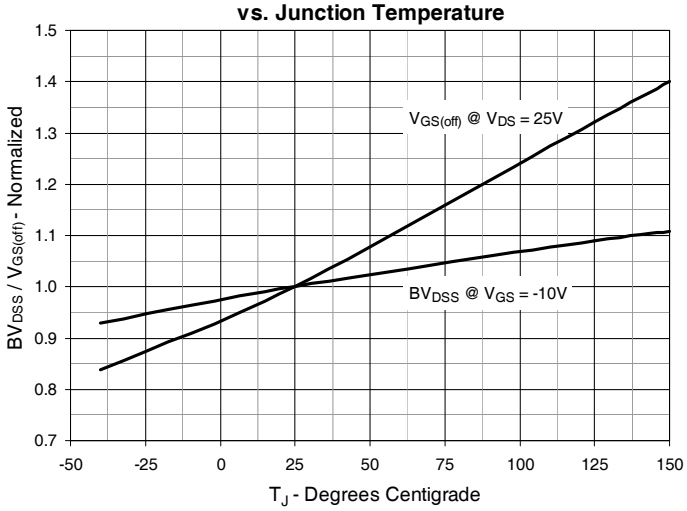


Fig. 11. Gate Charge

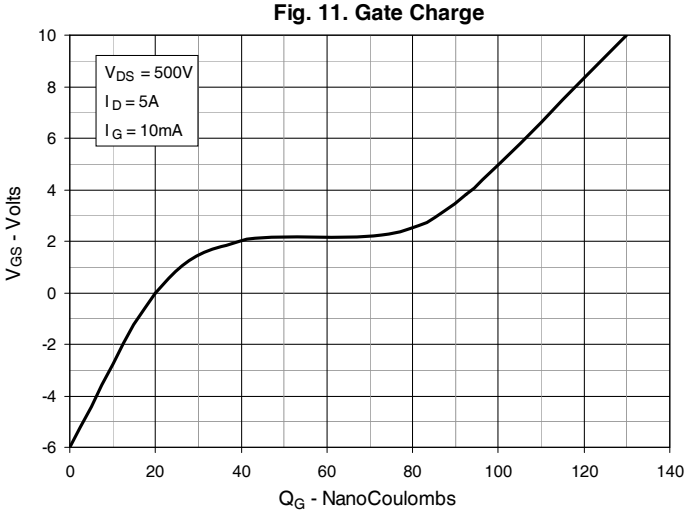


Fig. 12. Capacitance

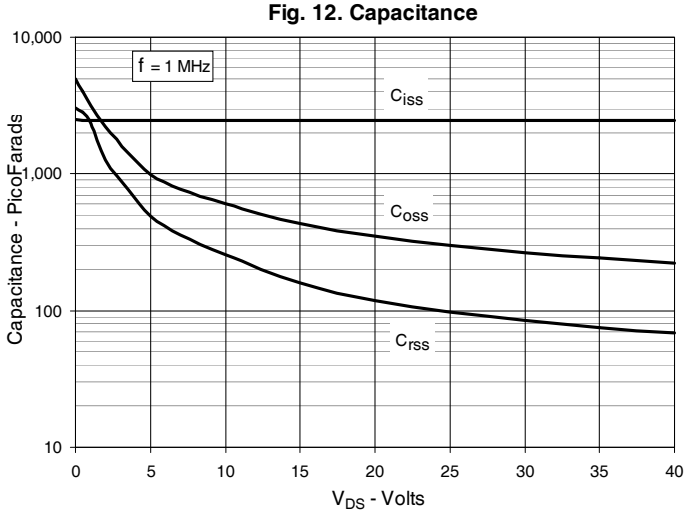


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25°C

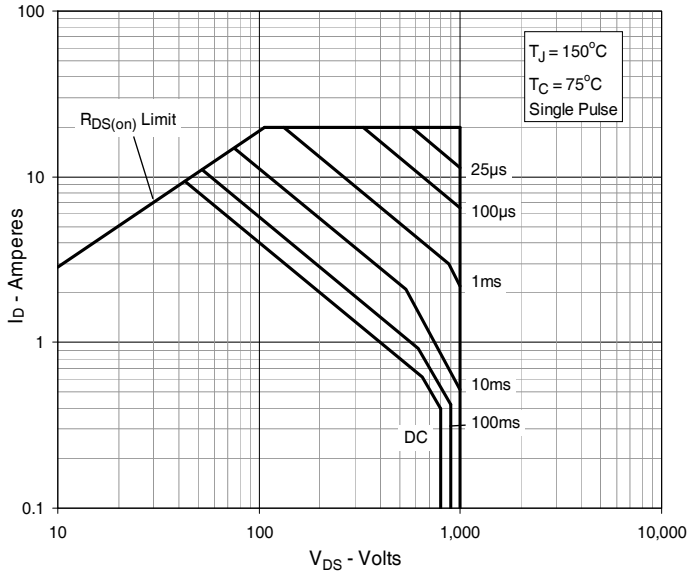


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 75°C

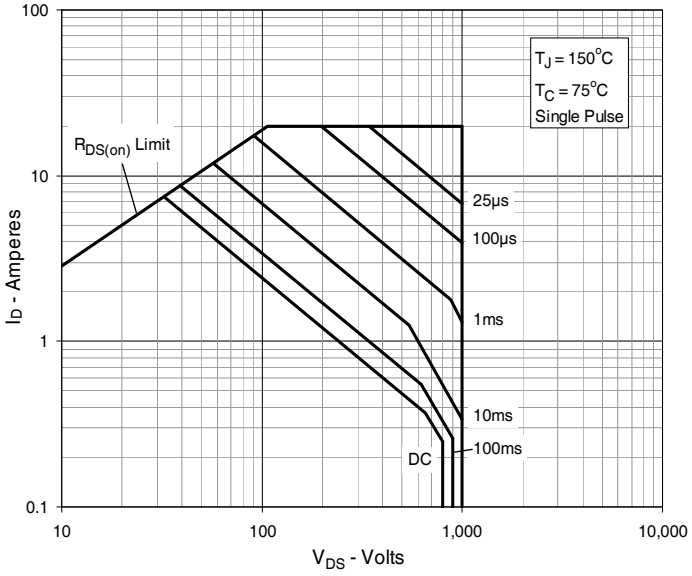
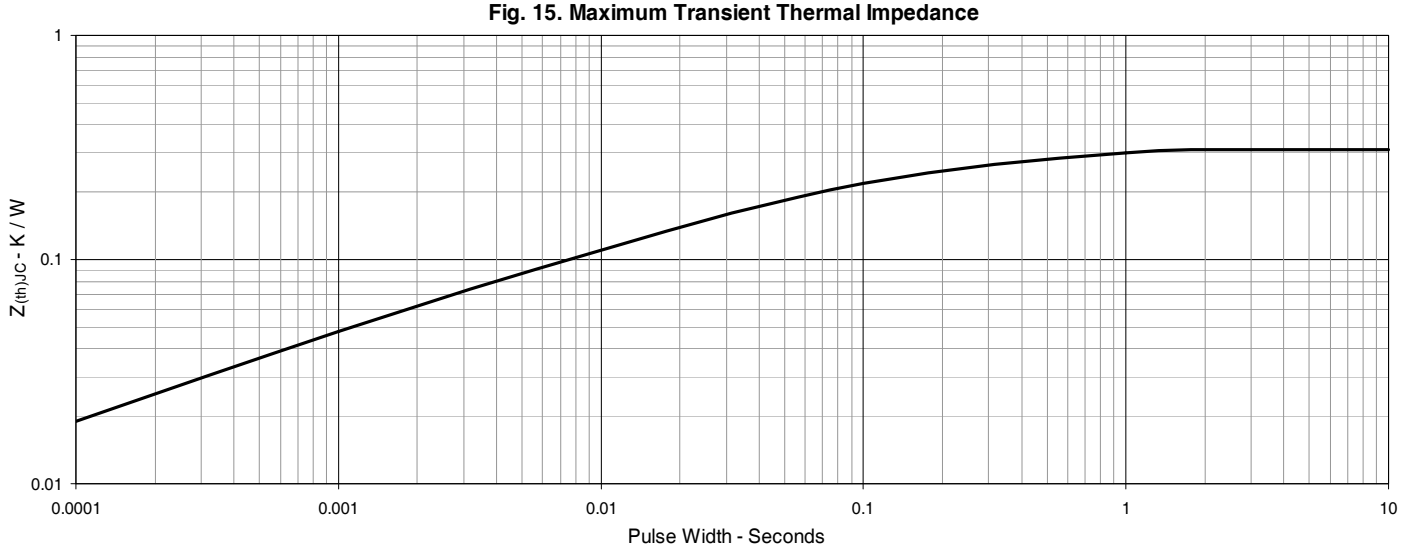
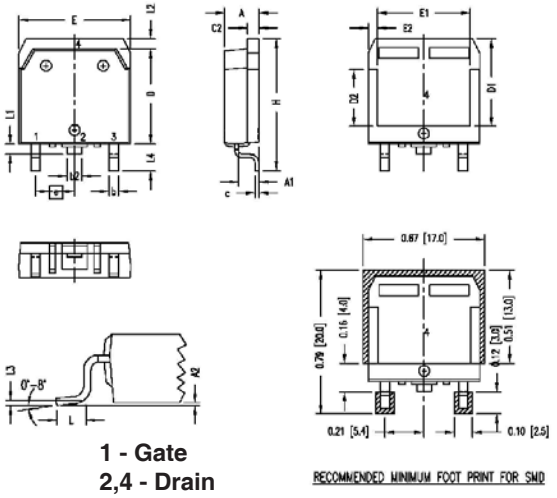


Fig. 15. Maximum Transient Thermal Impedance



TO-268 Outline

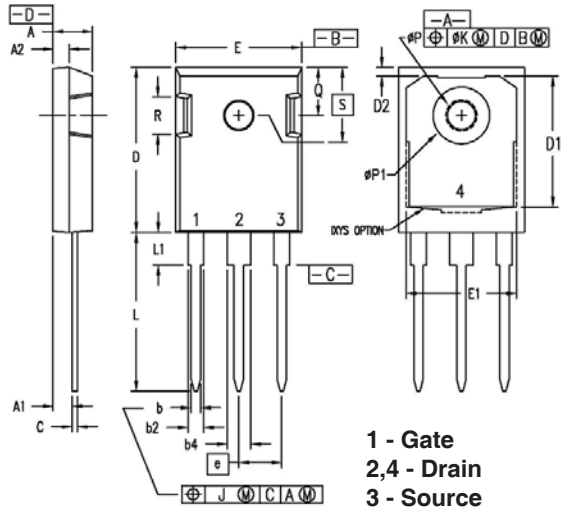


SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
D2	.320	.335	8.13	8.50
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
E2	.045	.055	1.14	1.39
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

1 - Gate
2,4 - Drain
3 - Source

NOTE: ALL METAL SURFACE ARE MATTE PURE TIN PLATED EXCEPT TRIM AREA.
Pb PLATING THICKNESS (4 ~ 20 um)

TO-247 Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b2	.075	.087	1.91	2.20
b4	.115	.126	2.92	3.20
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
D1	.650	.690	16.51	17.53
D2	.035	.050	0.89	1.27
E	.620	.635	15.75	16.13
E1	.545	.565	13.84	14.35
e	.215 BSC		5.45 BSC	
J	--	.010	--	0.25
K	--	.025	--	0.64
L	.780	.810	19.81	20.57
L1	.150	.170	3.81	4.32
øP	.140	.144	3.55	3.65
øP1	.275	.290	6.99	7.37
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.242 BSC		6.15 BSC	

1 - Gate
2,4 - Drain
3 - Source

NOTE: This drawing will meet all dimensions requirement of JEDEC outlines TO-247 AD (R-PSIP-F3)