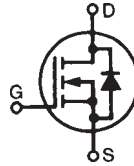


PolarHV™ Power MOSFET

IXTA 3N60P
IXTP 3N60P
IXTY 3N60P

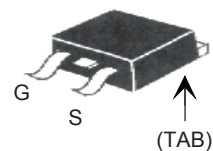
V_{DSS} = 600 V
I_{D25} = 3.0 A
R_{DS(on)} ≤ 2.9 Ω

N-Channel Enhancement Mode
Avalanche Rated

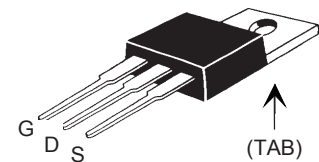


Symbol	Test Conditions	Maximum Ratings	
V _{DSS}	T _J = 25° C to 150° C	600	V
V _{DGR}	T _J = 25° C to 150° C; R _{GS} = 1 MΩ	600	V
V _{GS}	Continuous	± 30	V
V _{GSM}	Transient	± 40	V
I _{D25}	T _C = 25° C	3.0	A
I _{DM}	T _C = 25° C, pulse width limited by T _{JM}	6	A
I _{AR}	T _C = 25° C	3	A
E _{AR}	T _C = 25° C	10	mJ
E _{AS}	T _C = 25° C	100	mJ
dv/dt	I _S ≤ I _{DM} , di/dt ≤ 100 A/μs, V _{DD} ≤ V _{DSS} T _J ≤ 150° C, R _G = 30 Ω	5	V/ns
P _D	T _C = 25° C	70	W
T _J		-55 ... +150	°C
T _{JM}		150	°C
T _{stg}		-55 ... +150	°C
T _L	1.6 mm (0.062 in.) from case for 10 s	300	°C
T _{SOLD}	Plastic body for 10 s	260	°C
Weight	TO-220	4	g
	TO-263	3	g
	TO-252	0.35	g

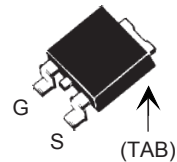
TO-263 (IXTA)



TO-220 (IXTP)



TO-252 (IXTY)



G = Gate D = Drain
S = Source TAB = Drain

Symbol	Test Conditions (T _J = 25° C unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV _{DSS}	V _{GS} = 0 V, I _D = 250 μA	600		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 50 μA	3.0		5.5 V
I _{GSS}	V _{GS} = ± 30 V _{DC} , V _{DS} = 0			± 100 nA
I _{DSS}	V _{DS} = V _{DSS} V _{GS} = 0 V T _J = 125° C			5 μA 50 μA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 I _{D25} , Note 1			2.9 Ω

Features

- † International standard packages
- † Unclamped Inductive Switching (UIS) rated
- † Low package inductance
- easy to drive and to protect

Advantages

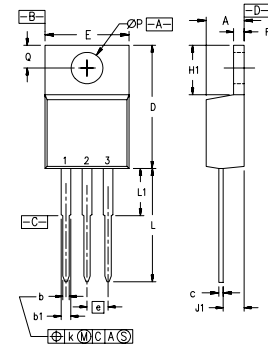
- † Easy to mount
- † Space savings
- † High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
($T_J = 25^\circ\text{C}$ unless otherwise specified)				
g_{fs}	$V_{DS} = 20\text{ V}; I_D = 0.5 I_{D25}$, Note 1	2.2	3.4	S
C_{iss}			411	pF
C_{oss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		44	pF
C_{rss}			6.4	pF
$t_{d(on)}$			25	ns
t_r	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_{D25}$		25	ns
$t_{d(off)}$	$R_G = 30\ \Omega$ (External)		58	ns
t_f			22	ns
$Q_{g(on)}$			9.8	nC
Q_{gs}	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$		3.4	nC
Q_{gd}			3.5	nC
R_{thJC}				1.80°C/W
R_{thCS}	(TO-220)	0.25		$^\circ\text{CW}$

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
($T_J = 25^\circ\text{C}$ unless otherwise specified)				
I_s	$V_{GS} = 0\text{ V}$			3 A
I_{SM}	Repetitive			9 A
V_{SD}	$I_F = I_s, V_{GS} = 0\text{ V}$, Note 1			1.5 V
t_{rr}	$I_F = 3\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}, V_{GS} = 0\text{ V}$		500	ns

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

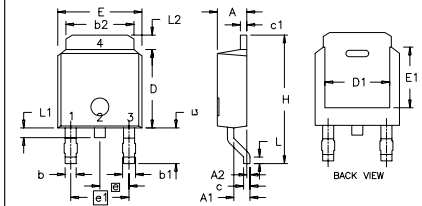
TO-220 (IXTP) Outline



Pins: 1 - Gate 2 - Drain
3 - Source 4 - Drain

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

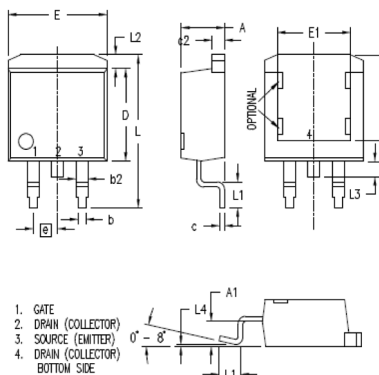
TO-252 (IXTY) Outline



Pins: 1 - Gate 3 - Source
4 - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

TO-263 (IXTA) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

IXYS reserves the right to change limits, test conditions, and dimensions.

Fig. 1. Output Characteristics @ 25°C

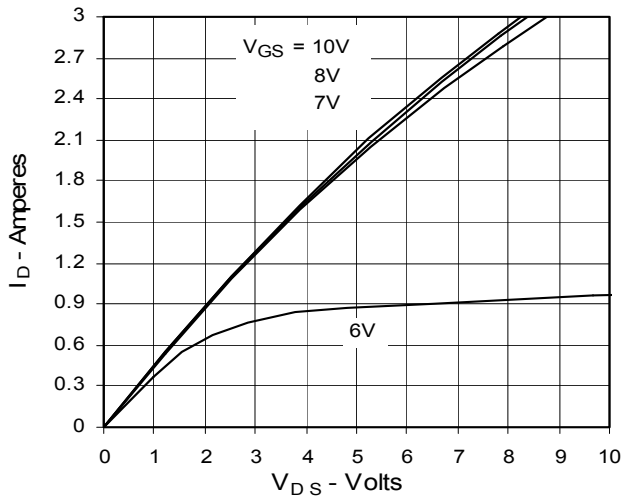


Fig. 2. Extended Output Characteristics @ 25°C

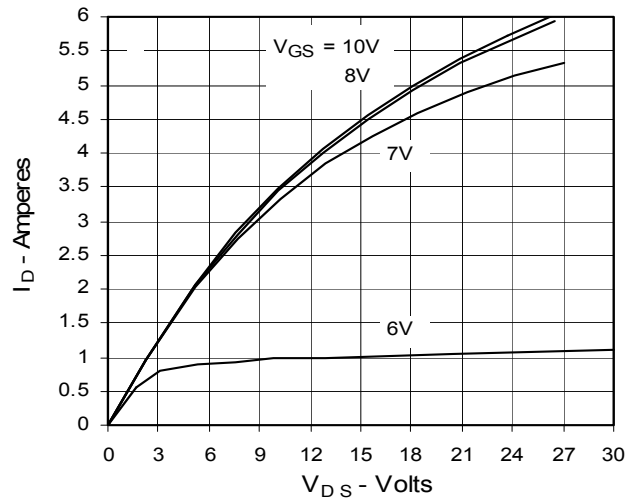


Fig. 3. Output Characteristics @ 125°C

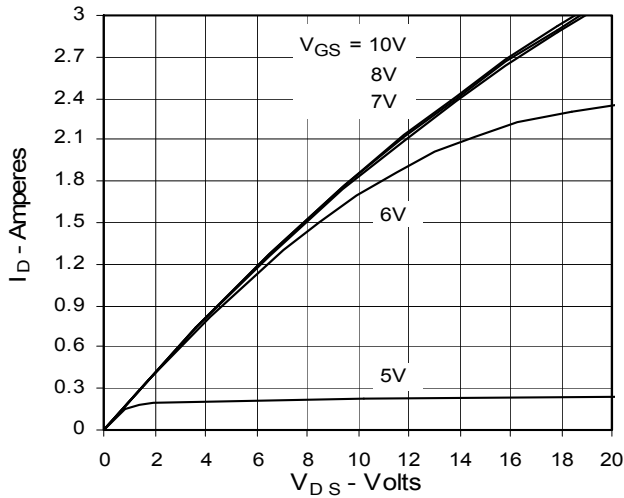


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

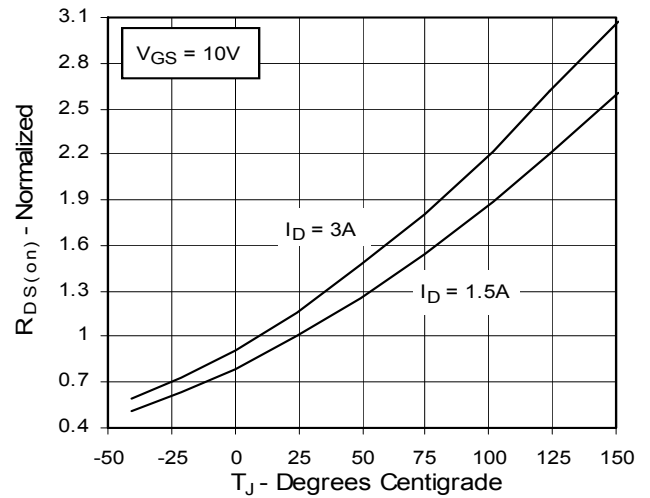


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

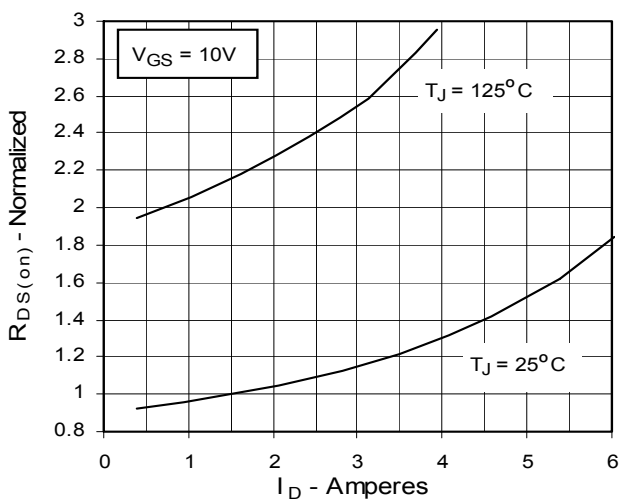


Fig. 6. Drain Current vs. Case Temperature

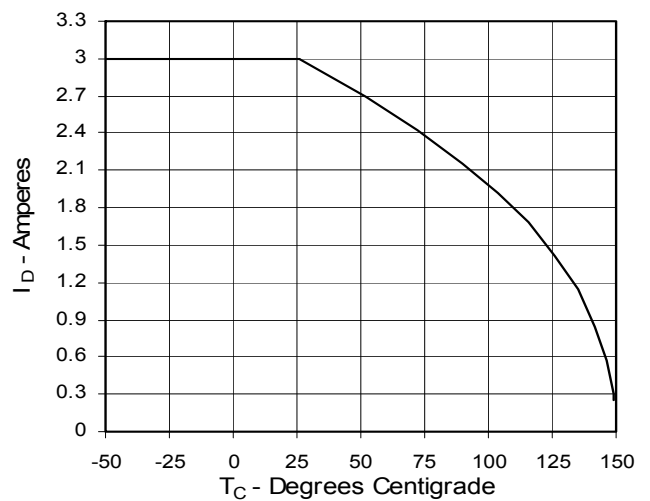


Fig. 7. Input Admittance

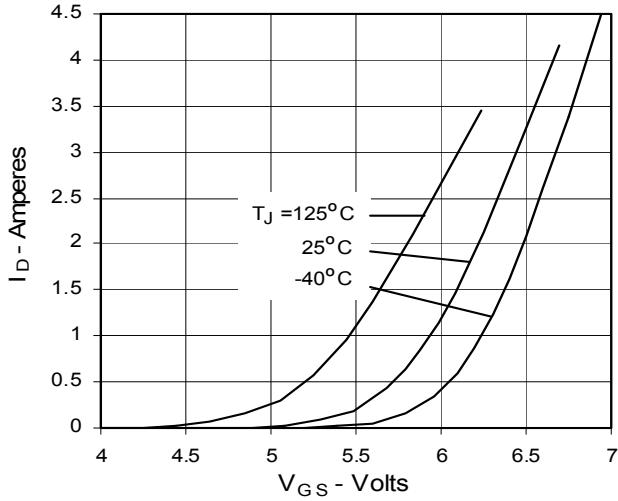


Fig. 8. Transconductance

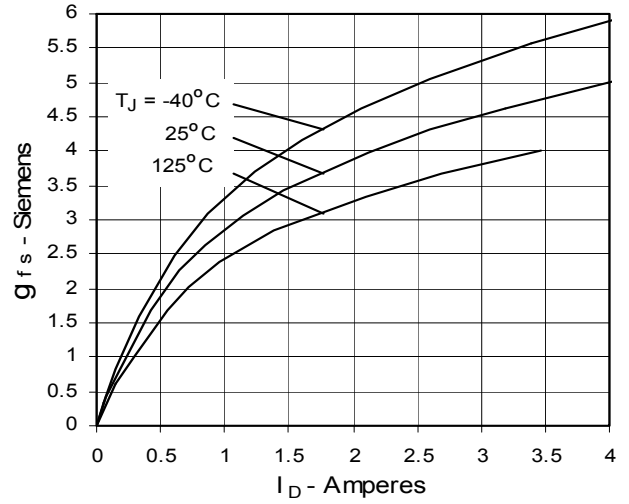


Fig. 9. Source Current vs. Source-To-Drain Voltage

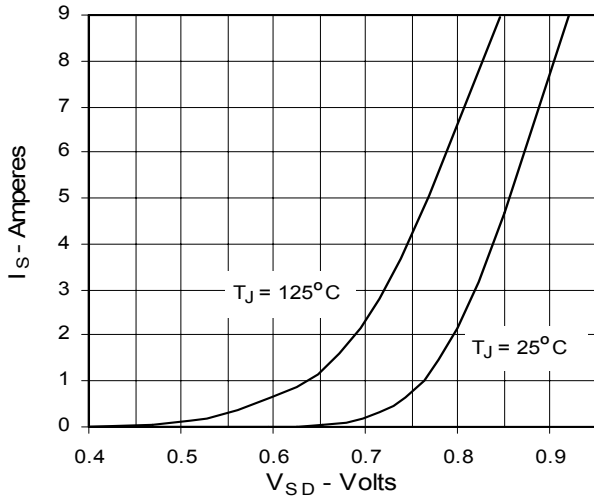


Fig. 10. Gate Charge

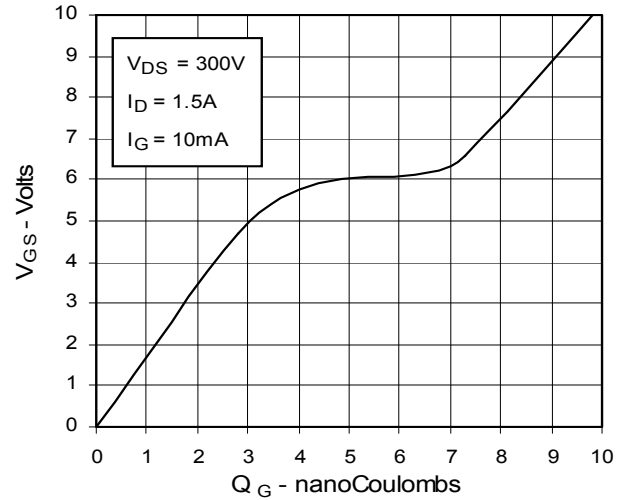


Fig. 11. Capacitance

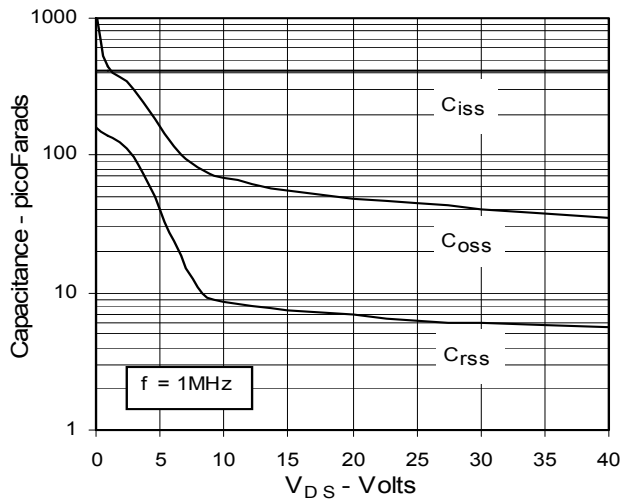


Fig. 13. Maximum Transient Thermal Resistance

