

Polar[™] Power MOSFET

IXTT69N30P IXTQ69N30P

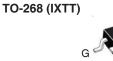
 $V_{DSS} = 300V$ $I_{D25} = 69A$ $R_{D25} \le 49m\Omega$

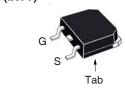
N-Channel Enhancement Mode Avalanche Rated



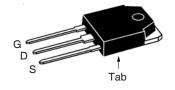
Symbol	Test Conditions	Maximum	Ratings
V _{DSS}	$T_{_{\rm J}} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	300	V
$\mathbf{V}_{\mathtt{DGR}}$	$T_{_{\rm J}} = 25^{\circ}\text{C}$ to 150°C, $R_{_{\rm GS}} = 1\text{M}\Omega$	300	V
V _{GSS}	Continuous	± 20	V
V _{GSM}	Transient	± 30	V
I _{D25}	T _c = 25°C	69	Α
I _{DM}	$T_{\rm C} = 25^{\circ}$ C, Pulse Width Limited by $T_{\rm JM}$	200	Α
I _A	T _c = 25°C	69	A
E _{AS}	$T_{c} = 25^{\circ}C$	1.5	J
dv/dt	$I_{\rm S} \leq I_{\rm DM}, V_{\rm DD} \leq V_{\rm DSS}, T_{\rm J} \leq 150^{\circ} \rm C$	15	V/ns
$\overline{\mathbf{P}_{D}}$	T _c = 25°C	500	W
T _J		-55 to +150	°C
T_JM		+150	°C
T_{stg}		-55 to +150	°C
T _L	1.6mm (0.063in) from Case for 10s	300	°C
$\mathbf{T}_{\mathtt{SOLD}}$	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-3P)	1.13/10	Nm/lb.in.
Weight	TO-268	4.0	g
	TO-3P	5.5	g

Symbol (T _J = 25°C, U	Test Conditions Unless Otherwise Specified)	Charae Min.	cteristic '	Values Max.	·
BV _{DSS}	$V_{GS} = 0V, I_{D} = 250\mu A$	300			V
V _{GS(th)}	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.5		5.0	V
I _{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nΑ
I _{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$			5	μA
	$T_J = 125$ °C			100	μΑ
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 0.5 \bullet I_{D25}, Note 1$			49	mΩ





TO-3P (IXTQ)



G = Gate D = DrainS = Source Tab = Drain

Features

- International Standard Packages
- Fast Intrinsic Diode
- Avalanche Rated
- $^{\bullet}$ Low $\rm R_{\rm DS(ON)}$ and $\rm Q_{\rm G}$
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Coverters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- AC and DC Motor Drives
- Uninterrupted Power Supplies
- High Speed Power Switching Applications



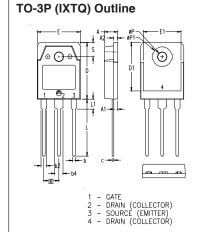
Symbo (T _J = 25		Test Conditions Unless Otherwise Specified)	Charac Min.	cteristic \ Typ.	Values Max.
g _{fs}		$V_{DS} = 10V, I_{D} = 0.5 \cdot I_{D25}, \text{ Note 1}$	30	48	S
C _{iss})			4960	nF
C _{oss}	}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		760	pF
\mathbf{C}_{rss}	J			190	pF
t _{d(on)})	Resistive Switching Times		25	ns
t _r		$V_{GS} = 10V$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_{D} = I_{D25}$		25	ns
$\mathbf{t}_{d(off)}$		$R_{G} = 4\Omega$ (External)		75	ns
t _f	J	Tig = 132 (External)		27	ns
Q _{g(on)})			156	180 nC
\mathbf{Q}_{gs}	}	$V_{GS} = 10V$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_{D} = 0.5 \cdot I_{D25}$		32	nC
\mathbf{Q}_{gd}	J			79	nC
R _{thJC}					0.25 °C/W
R_{thCS}		TO-3P		0.21	°C/W

Source-Drain Diode

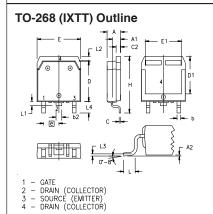
Symbol Test Conditions			Characteristic Values			
$(T_{J} = 28)$	5°C, Unless Otherwise Specified)	Min.	Тур.	Max.		
Is	$V_{GS} = 0V$			69	Α	
I _{SM}	Repetitive, Pulse Width Limited by $T_{_{\rm JM}}$			270	Α	
V _{SD}	$I_F = I_S$, $V_{GS} = 0V$, Note 1			1.5	V	
t _{rr}	$\begin{cases} I_F = 25A, -di/dt = 100A/\mu s, \\ V_B = 100V, V_{GS} = 0V \end{cases}$		330		ns	
$\mathbf{Q}_{_{\mathrm{RM}}}$	$\int V_{R} = 100V, V_{GS} = 0V$		4.13		μC	

Note 1. Pulse test, $t \le 300\mu s$, duty cycle, $d \le 2\%$.

IXTT69N30P



SYM	INCH	łES	MILLIMETERS	
21101	MIN	MAX	MIN	MAX
Α	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
ь4	.114	.126	2.90	3.20
С	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
е	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
ØΡ	.126	.134	3.20	3.40
øP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10



MY2	INCH	ES	MILLIMETER	
21M	MIN	MAX	MIN	MAX
Α	.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
С	.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
Е	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
е	.215 BSC		5.45 BSC	
Н	.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

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

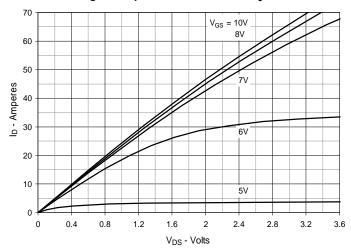


Fig. 2. Extended Output Characteristics @ T_J = 25°C

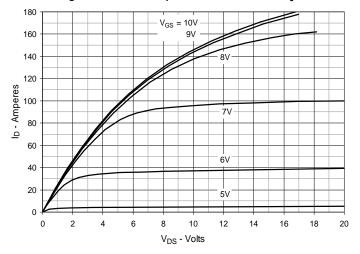


Fig. 3. Output Characteristics @ T_J = 125°C

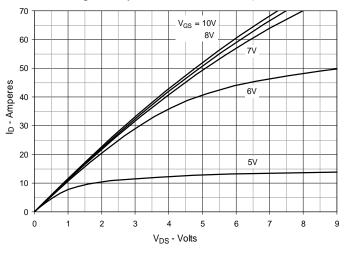


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 34.5A Value vs. Junction Temperature

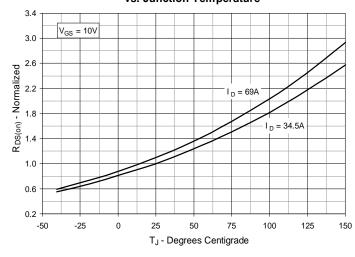


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 34.5A$ Value vs. Drain Current

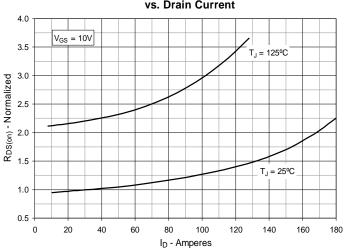
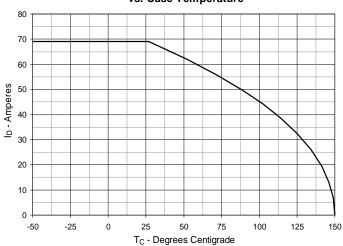
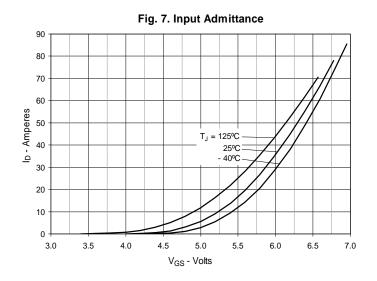
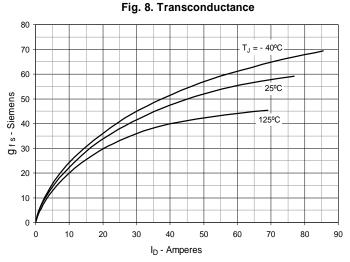


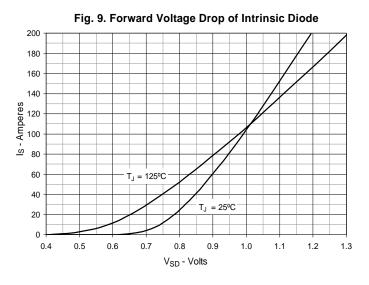
Fig. 6. Maximum Drain Current vs. Case Temperature

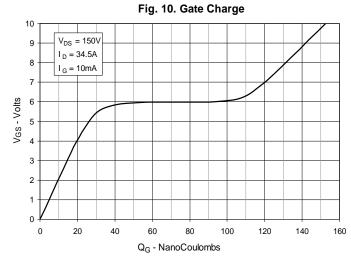


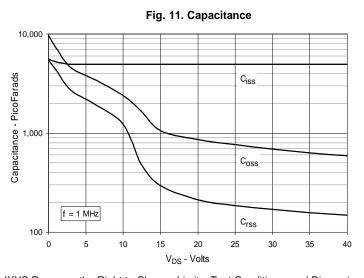


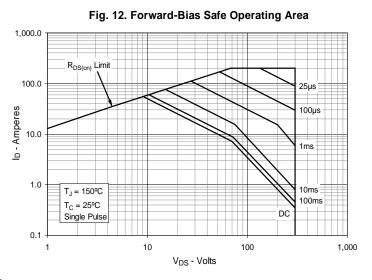












 $\ensuremath{\mathsf{IXYS}}$ Reserves the Right to Change Limits, Test Conditions, and Dimensions.

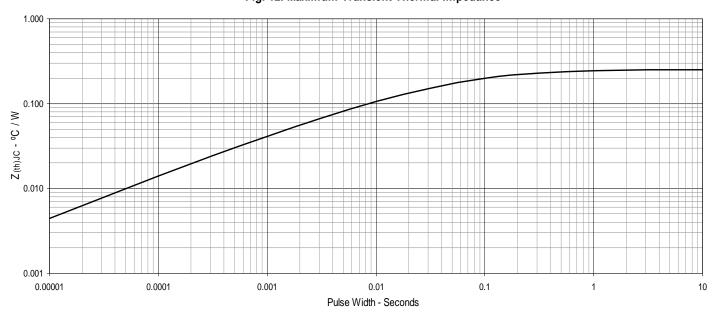


Fig. 12. Maximum Transient Thermal Impedance

