

X4-Class **Power MOSFET™**

IXTA150N15X4 IXTA150N15X4-7

N-Channel Enhancement Mode Avalanche Rated



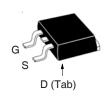
g JE	
<i>م</i> ــــــــــــــــــــــــــــــــــــ	is s

Symbol	Symbol Test Conditions Maximu		um Ratings	
V _{DSS}	$T_{_{\rm J}} = 25^{\circ}\text{C to } 175^{\circ}\text{C}$	150	V	
V _{DGR}	$T_{_{\rm J}} = 25^{\circ}\text{C}$ to 175°C, $R_{_{\rm GS}} = 1\text{M}\Omega$	150	V	
V _{GSS}	Continuous	±20	V	
V _{GSM}	Transient	±30	V	
I _{D25}	T _C = 25°C	150	Α	
I _{L(RMS)}	External Lead Current Limit	120	Α	
I _{DM}	$T_{\rm C} = 25^{\circ}$ C, Pulse Width Limited by $T_{\rm JM}$	260	Α	
I _A	$T_c = 25^{\circ}C$	75	Α	
E _{AS}	$T_{c} = 25^{\circ}C$	1	J	
dv/dt	$I_{_{S}} \le I_{_{DM}}, V_{_{DD}} \le V_{_{DSS}}, T_{_{J}} \le 150^{\circ}C$	10	V/ns	
P _D	T _C = 25°C	480	W	
T _J		-55 +175	°C	
T_{JM}		175	°C	
T _{stg}		-55 +175	°C	
T _L	Maximum Lead Temperature for Soldering	g 300	°C	
T _{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C	
F _c	Mounting Force	1065 / 2.214.6	N/lb	
Weight	TO-263	2.5	g	
-	TO-263 (7Leads)	3.0	9	

		Charac Min.	cteristic Values Typ. Max.		
BV _{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	150			V
$V_{\rm GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.5		4.5	V
I _{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
I _{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$ $T_{J} = 150^{\circ}C$			10 500	μ Α μ Α
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 0.5 \bullet I_{D25}, Note 1$			6.9	$m\Omega$

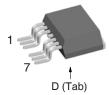
150V 150A $6.9 m\Omega$

TO-263



G = Gate= Drain S = Source Tab = Drain

TO-263 (7-Leads)



Pins: 1 - Gate 2, 3, 5, 6, 7 - Source 4 (Tab) - Drain

Features

- International Standard Packages
- Low R_{DS(ON)} and Q_G
 Avalanche Rated
- Low Package Inductance

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- DC-DC Converters
- PFC Circuits
- AC and DC Motor Drives
- · Robotics and Servo Controls



		acteristic		
$(1_J = 25^{\circ}C, C)$	Jnless Otherwise Specified)	Min.	Тур.	Max
\mathbf{g}_{fs}	$V_{DS} = 10V$, $I_{D} = 60A$, Note 1	70	120	S
R_{Gi}	Gate Input Resistance		1.3	Ω
C _{iss}			5500	pF
C _{oss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		900	pF
C _{rss}			4	pF
$\mathbf{C}_{\mathrm{o(er)}}$ $\mathbf{C}_{\mathrm{o(tr)}}$	Effective Output Capacitance Energy related $V_{GS} = 0V$ Time related $V_{DS} = 0.8 \cdot V_{DSS}$		660 2100	pF pF
$\left.\begin{array}{c} \hline \\ t_{d(on)} \\ t_r \\ t_{d(off)} \\ t_f \end{array}\right\}$	Resistive Switching Times $V_{GS} = 10V, \ V_{DS} = 0.5 \bullet V_{DSS}, \ I_D = 0.5 \bullet I_{D25}$ $R_G = 2\Omega \ (External)$		23 5 60 6	ns ns ns ns
$\left. egin{array}{l} \mathbf{Q}_{g(on)} \\ \mathbf{Q}_{gs} \\ \mathbf{Q}_{gd} \end{array} ight. ight.$	$V_{GS} = 10V, V_{DS} = 0.5 \bullet V_{DSS}, I_{D} = 0.5 \bullet I_{D25}$		105 30 28	nC nC nC
R _{thJC}				0.31 °C/W

Source-Drain Diode

Symbol $(T_J = 25^{\circ}C,$	Test Conditions Unless Otherwise Specified)	Chara Min.	cteristic Typ.	Values Max	
I _s	$V_{GS} = 0V$			150	Α
SM	Repetitive, pulse Width Limited by $T_{_{JM}}$			600	Α
$\mathbf{V}_{\mathtt{SD}}$	$I_F = 100A$, $V_{GS} = 0V$, Note 1			1.4	V
$\left\{ egin{array}{c} \mathbf{t}_{rr} & \\ \mathbf{Q}_{RM} & \\ \mathbf{I}_{RM} & \end{array} ight\}$	$I_F = 75A$, -di/dt = 100A/ μ s $V_R = 75V$		100 350 7		ns nC A

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

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.



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

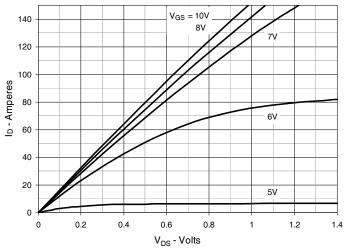


Fig. 2. Extended Output Characteristics @ T_J = 25°C

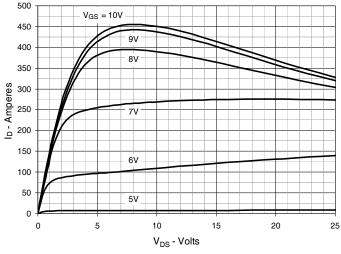


Fig. 3. Output Characteristics @ T_J = 150°C

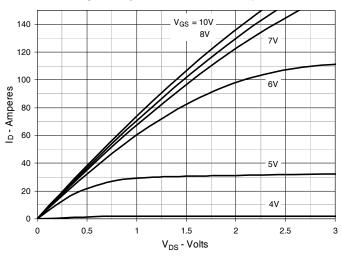


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 75A$ Value vs.

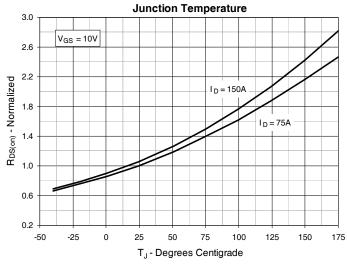


Fig. 5. $R_{DS(on)}\,\mbox{Normalized to I}_D$ = 75A Value vs.

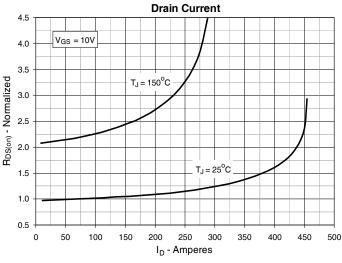
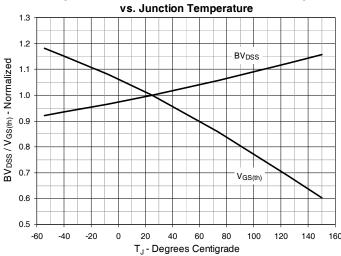


Fig. 6. Normalized Breakdown & Threshold Voltages





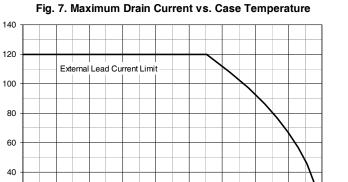
ID - Amperes

20

0 ↓ -50

-25

0

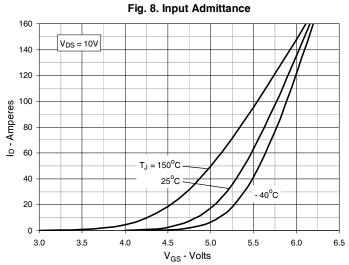


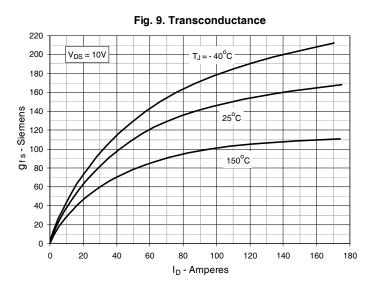
75

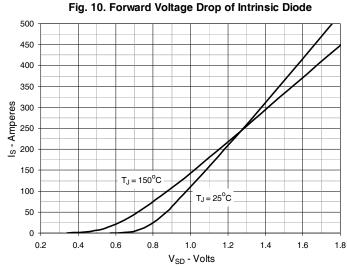
T_C - Degrees Centigrade

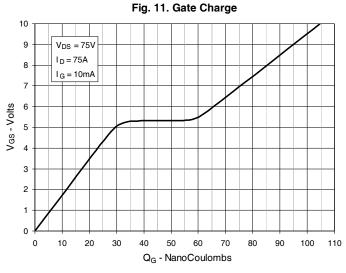
150

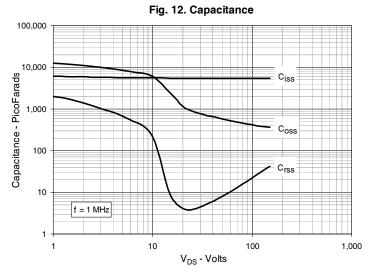
175











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

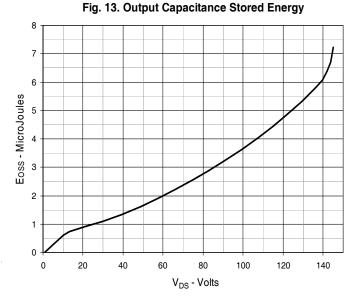


Fig. 14. Forward-Bias Safe Operating Area

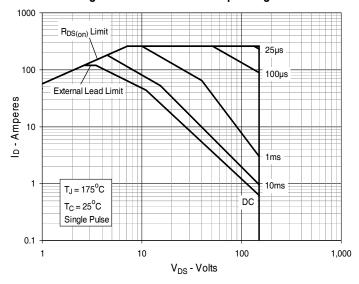
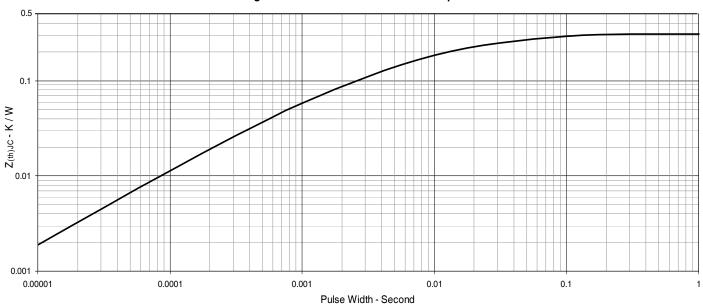
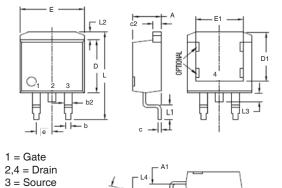


Fig. 15. Maximum Transient Thermal Impedance



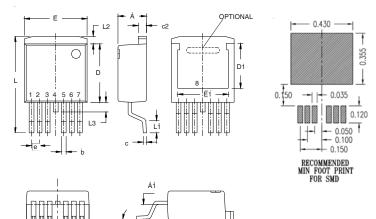


TO-263 (IXTA) Outline



SYM	INCH	INCHES MILLIME		1ETERS
3114	MIN	MAX	MIN	MAX
Α	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
ь	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
С	.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
е	.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

TO-263 (7-lead) (IXTA..7) Outline



SYM	INCHES		MILLIMETER	
2114	MIN	MAX	MIN	MAX
Α	.170	.185	4.30	4.70
Α1	.085	.104	2.15	2.65
р	.026	.035	0.65	0.90
С	.016	.024	0.40	0.60
с2	.049	.055	1.25	1.40
D	.355	.370	9.00	9.40
D1	.272	.280	6.90	7.10
Ε	.386	.402	9.80	10.20
E1	.311	.319	7.90	8.10
е	.050 BSC		1.27BSC	
L	.591	.614	15.00	15.60
L1	.091	.110	2.30	2.80
L2	.039	.059	1.00	1.50
L3	.000	.059	0.00	1.50

