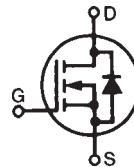
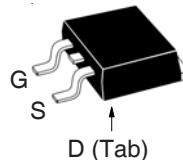


X3-Class
Power MOSFET™
IXTA90N20X3
 $V_{DSS} = 200V$
 $I_{D25} = 90A$
 $R_{DS(on)} \leq 12m\Omega$
N-Channel Enhancement Mode
Avalanche Rated


TO-263


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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ C$ to $175^\circ C$	200	V
V_{DGR}	$T_J = 25^\circ C$ to $175^\circ C$, $R_{GS} = 1M\Omega$	200	V
V_{GSS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ C$	90	A
I_{DM}	$T_C = 25^\circ C$, Pulse Width Limited by T_{JM}	220	A
I_A	$T_C = 25^\circ C$	45	A
E_{AS}	$T_C = 25^\circ C$	1	J
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ C$	20	V/ns
P_D	$T_C = 25^\circ C$	390	W
T_J		-55 ... +175	$^\circ C$
T_{JM}		175	$^\circ C$
T_{stg}		-55 ... +175	$^\circ C$
T_L	Maximum Lead Temperature for Soldering	300	$^\circ C$
dT/dt	Heating / Cooling rate, $175^\circ C$ - $210^\circ C$	50	$^\circ C/min$
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	$^\circ C$
F_c	Mounting Force	10..65 / 2.2..14.6	N/lb
Weight		2.5	g

Symbol	Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0V$, $I_D = 250\mu A$	200		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20V$, $V_{DS} = 0V$			± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ C$			5 μA 100 μA
$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 0.5 \cdot I_{D25}$, Note 1			12 m Ω

Features

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

Advantages

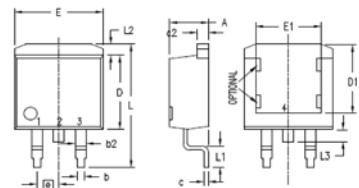
- High Power Density
- Easy to Mount
- Space Savings

Applications

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

Symbol	Test Conditions ($T_j = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max
g_{fs}	$V_{DS} = 10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1	60	100	S
R_{Gi}	Gate Input Resistance	1.4		Ω
C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$	5420		pF
C_{oss}		930		pF
C_{rss}		4		pF
Effective Output Capacitance				
$C_{o(er)}$	Energy related	420		pF
$C_{o(tr)}$	Time related	1300		pF
Resistive Switching Times				
$t_{d(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$	22		ns
t_r		26		ns
$t_{d(off)}$		62		ns
t_f		13		ns
$Q_{g(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$	78		nC
Q_{gs}		23		nC
Q_{gd}		22		nC
R_{thJC}			0.32	$^\circ\text{C}/\text{W}$

TO-263 (IXTA) Outline



1 = Gate
2 = Drain
3 = Source
4 = Drain

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

Source-Drain Diode

Symbol (T _J = 25°C, Unless Otherwise Specified)	Test Conditions	Characteristic Values		
		Min.	Typ.	Max
I _s	V _{GS} = 0V			90 A
I _{SM}	Repetitive, pulse Width Limited by T _{JM}			360 A
V _{SD}	I _F = I _S , V _{GS} = 0V, Note 1			1.4 V
t _{rr} Q _{RM} I _{RM}	I _F = 45A, -di/dt = 100A/μs V _R = 100V	124 650 10.5		ns nC A

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

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.

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IXYS REF: T_90N20X3(25-S202) 5-31-17-A

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



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