Advance Technical Information

X3-Class **Power MOSFET™**

IXTA90N20X3

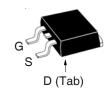
= 200V= 90A \leq 12m Ω

N-Channel Enhancement Mode Avalanche Rated



G.	
ŏ-	S. S

TO-263



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

Symbol	Test Conditions	Maximum	Ratings
V _{DSS}	$T_J = 25^{\circ}C \text{ to } 175^{\circ}C$	200	V
V _{DGR}	$T_J = 25^{\circ}C$ to 175°C, $R_{GS} = 1M\Omega$	200	V
V _{GSS}	Continuous	±20	V
$V_{\rm GSM}$	Transient	±30	V
I _{D25}	$T_{c} = 25^{\circ}C$	90	Α
I _{DM}	$T_{\rm C} = 25^{\circ}$ C, Pulse Width Limited by $T_{\rm JM}$	220	Α
I _A	T _C = 25°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°C	390	W
T _J		-55 +175	°C
T _{JM}		175	°C
T _{stg}		-55 +175	°C
T _L	Maximum Lead Temperature for Soldering Heating / Cooling rate, 175°C - 210°C	g 300 50	°C/min
$\mathbf{T}_{\mathtt{SOLD}}$	1.6 mm (0.062in.) from Case for 10s	260	°C
F _c	Mounting Force	1065 / 2.214.6	N/lb
Weight		2.5	g

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

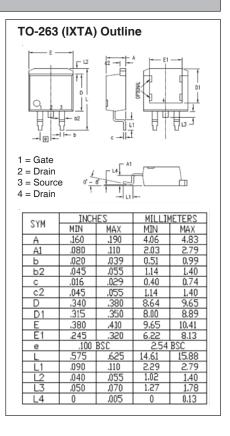
Applications

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

SymbolTest ConditionsCharacter $(T_J = 25^{\circ}C, Unless Otherwise Specified)$ Min.		cteristic ' Typ.	eristic Values Typ. Max.		
BV _{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	200			V
$V_{\rm GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5		4.5	V
GSS	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
I _{DSS}	$V_{DS} = V_{DSS}, V_{GS} = 0V$			5	μΑ
	$T_{_{\mathrm{J}}} = 125^{\circ}\mathrm{C}$			100	μΑ
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 0.5 \cdot I_{D25}, Note 1$			12	mΩ



Symbol Test Conditions C		Chai	aracteristic Values		
$(T_{J} = 25^{\circ}C,$	Unless Otherwise Specified)	Min.	Тур.	Max	
g _{fs}	V _{DS} = 10V, I _D = 0.5 • I _{D25} , Note 1	60	100	S	
R_{Gi}	Gate Input Resistance		1.4	Ω	
C _{iss}			5420	pF	
C _{oss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		930	pF	
C _{rss}			4	pF	
	Effective Output Capacitance				
$\mathbf{C}_{o(er)}$	Energy related $\int_{GS} V_{GS} = 0V$		420	pF	
$C_{o(tr)}$	Time related $\int V_{DS}^{GS} = 0.8 \cdot V_{DSS}$		1300	pF	
t _{d(on)}	Resistive Switching Times		22	ns	
t, \	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 0.5 \cdot I_{D25}$		26	ns	
t _{d(off)}	$R_{\rm G} = 5\Omega$ (External)		62	ns	
t,)	$H_{G} = 552 \text{ (External)}$		13	ns	
$Q_{g(on)}$			78	nC	
Q _{gs}	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 0.5 \cdot I_{D25}$		23	nC	
Q _{gd}			22	nC	
R _{thJC}				0.32 °C/W	



Source-Drain Diode

Symbol	Test Conditions	Characteristic Values			
$T_{\rm J} = 25^{\circ}$ C,	Unless Otherwise Specified)	Min.	Тур.	Max	
Is	$V_{GS} = 0V$			90	Α
SM	Repetitive, pulse Width Limited by T_{JM}			360	Α
V _{SD}	$I_F = I_S$, $V_{GS} = 0V$, Note 1			1.4	V
$\left. egin{array}{c} \mathbf{t}_{rr} & \ \mathbf{Q}_{RM} \ \mathbf{I}_{RM} & \end{array} ight. ight.$	$I_F = 45A$, -di/dt = 100A/µs $V_R = 100V$		124 650 10.5		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.

