IXYS

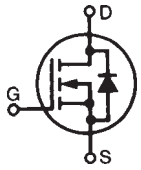
Advance Technical Information

TrenchT4™ Power MOSFET

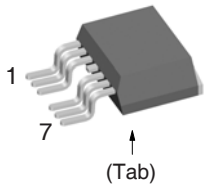
IXTA380N036T4-7

V_{DSS} = 36V
I_{D25} = 380A
$R_{DS(on)}$ ≤ 1.0mΩ

N-Channel Enhancement Mode
Avalanche Rated



TO-263 (7-lead)



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

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	36	V
V_{DGR}	T_J = 25°C to 175°C, R_{GS} = 1MΩ	36	V
V_{GSM}	Transient	±15	V
I_{D25}	T_C = 25°C	380	A
I_{LRMS}	Lead Current Limit, RMS	160	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	830	A
I_A	T_C = 25°C	190	A
E_{AS}	T_C = 25°C	1.4	J
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	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
F_C	Mounting Force	10.65 / 2.2..14.6	N/lb
Weight		3.0	g

Features

- International Standard Package
- 175°C Operating Temperature
- High Current Handling Capability
- Avalanche Rated
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- DC-DC Converts & Off-Line UPS
- High Current Switching Applications
- Primary-Side Switch

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	36			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.0		4.0	V
I_{GSS}	V_{GS} = ±15V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			10	μA
	T_J = 150°C			750	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 100A, Note 1			1.0	mΩ

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Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 60A, Note 1	105	175		S
R_{Gi}	Gate Input Resistance		1.0		Ω
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		13.4		nF
C_{oss}			2400		pF
C_{rss}			1650		pF
$t_{d(on)}$	**Resistive Switching Times**		36		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		78		ns
$t_{d(off)}$	R_G = 5Ω (External)		125		ns
t_f			80		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		260		nC
Q_{gs}			60		nC
Q_{gd}			92		nC
R_{thJC}				0.31	°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			380	A
I_{SM}	Repetitive, Pulse width limited by T_{JM}			1520	A
V_{SD}	I_F = 100A, V_{GS} = 0V, Note 1			1.4	V
t_{rr}	I_F = 150A, V_{GS} = 0V		54		ns
I_{RM}	-di/dt = 100A/μs		2.6		A
Q_{RM}	V_R = 30V		70		nC

Note 1: Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.

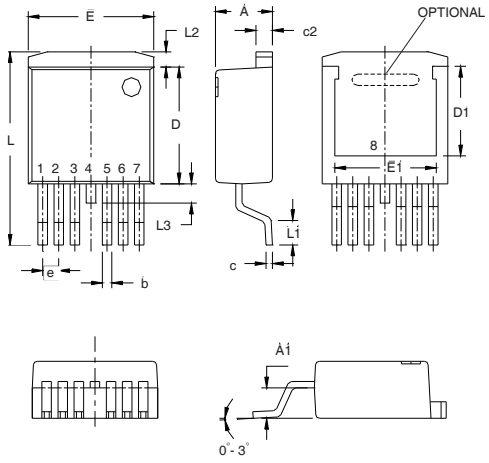
ADVANCE TECHNICAL INFORMATION

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.

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

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

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



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

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.170	.185	4.30	4.70
A1	.085	.104	2.15	2.65
b	.026	.035	0.65	0.90
c	.016	.024	0.40	0.60
c2	.049	.055	1.25	1.40
D	.355	.370	9.00	9.40
D1	.272	.280	6.90	7.10
E	.386	.402	9.80	10.20
E1	.311	.319	7.90	8.10
e	.050 BSC		1.27 BSC	
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

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