IXFT15N100Q3 Datasheet

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DiGi Electronics Part Number	IXFT15N100Q3-DG
Manufacturer	IXYS
Manufacturer Product Number	IXFT15N100Q3
Description	MOSFET N-CH 1000V 15A TO268
Detailed Description	N-Channel 1000 V 15A (Tc) 690W (Tc) Surface Mount TO-268AA

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
IXFT15N100Q3	IXYS
Series:	Product Status:
HiPerFET™, Q3 Class	Active
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
1000 V	15A (Tc)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	1.05Ohm @ 7.5A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
6.5V @ 4mA	64 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±30V	3250 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	690W (Tc)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Supplier Device Package:	Package / Case:
TO-268AA	TO-268-3, D³Pak (2 Leads + Tab), TO-268AA
Base Product Number:	
IXFT15	

Environmental & Export classification

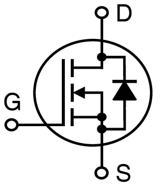
RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

Q3-Class
HiperFET™
Power MOSFET

IXFT15N100Q3
IXFH15N100Q3

V_{DSS}	=	1000V
I_{D25}	=	15A
$R_{DS(on)}$	≤	1.05Ω
t_{rr}	≤	250ns

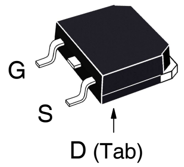
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Rectifier



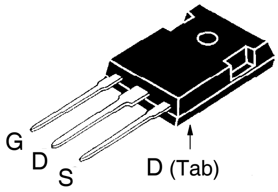
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	1000	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	1000	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	15	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	45	A
I_A	T_C = 25°C	7.5	A
E_{AS}	T_C = 25°C	1.0	J
dv/dt	$I_S \leq I_{DM}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150°C$	50	V/ns
P_D	T_C = 25°C	690	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13 / 10	Nm/lb.in.
Weight	TO-268 TO-247	4.0 6.0	g g

Symbol	Test Conditions	Characteristic Values			
	(T_J = 25°C Unless Otherwise Specified)	Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 1mA	1000			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 4mA	3.5		6.5	V
I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0V			25	µA
	T_J = 125°C			1.5	mA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.5 • I_{D25}, Note 1			1.05	Ω

TO-268
(IXFT)



TO-247
(IXFH)



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

Features

- Low Intrinsic Gate Resistance
- International Standard Packages
- Low Package Inductance
- Fast Intrinsic Rectifier
- Low $R_{DS(on)}$ and Q_G

Advantages

- High Power Density
- Easy to Mount
- Space Savings

Applications

- DC-DC Converters
- Battery Chargers
- Switch-Mode and Resonant-Mode Power Supplies
- DC Choppers
- Temperature and Lighting Controls

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Symbol	**Test Conditions** (T_J = 25°C Unless Otherwise Specified)	**Characteristic Values** **Min.**	**Typ.**	**Max.**	
g_{fs}	V_{DS} = 20V, I_D = 0.5 • I_{D25}, Note 1	7.5	12.5		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		3250		pF
C_{oss}			265		pF
C_{rss}			24		pF
R_{Gi}	Gate Input Resistance		0.20		Ω
$t_{d(on)}$	**Resistive Switching Times** V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 2Ω (External)		28		ns
t_r			10		ns
$t_{d(off)}$			30		ns
t_f			8		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		64		nC
Q_{gs}			23		nC
Q_{gd}			27		nC
R_{thJC}				0.18	°C/W
R_{thCS}	TO-247		0.21		°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			15	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			60	A
V_{SD}	I_F = I_S, V_{GS} = 0V, Note 1			1.4	V
t_{rr}	I_F = 7.5A, -di/dt = 100A/μs V_R = 100V, V_{GS} = 0V			250	ns
I_{RM}			7.6		A
Q_{RM}			660		nC

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

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 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2 4,860,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

Fig. 1. Output Characteristics @ $T_J = 25^oC$

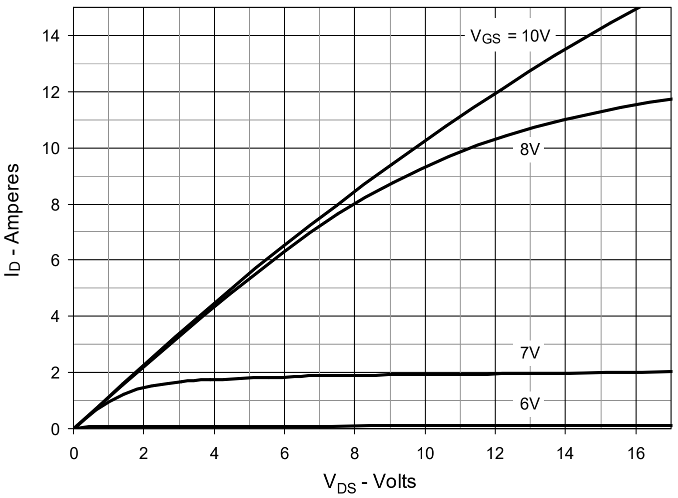

Fig. 2. Extended Output Characteristics @ $T_J = 25^oC$

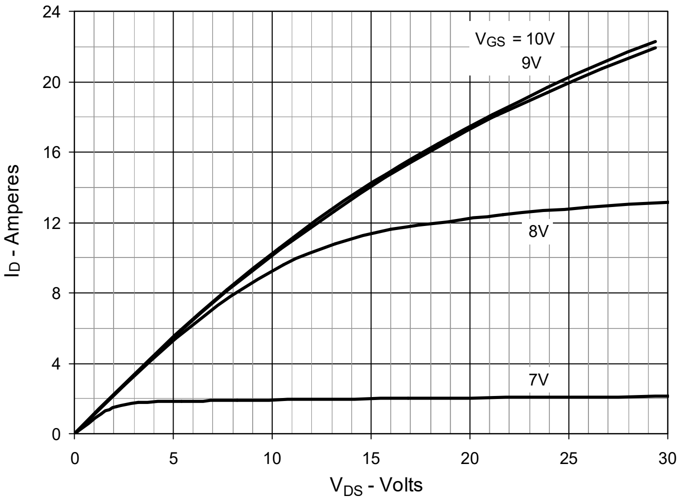

Fig. 3. Output Characteristics @ $T_J = 125^oC$

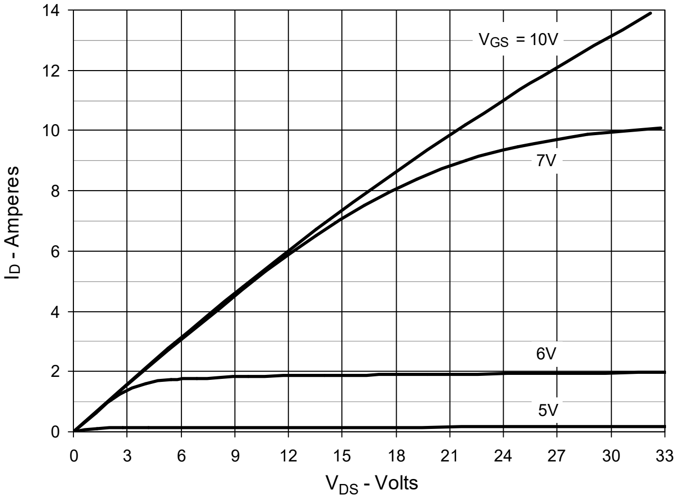

Fig. 4. $R_{DS(on)}$ Normalized to I_D = 7.5A Value vs. Junction Temperature

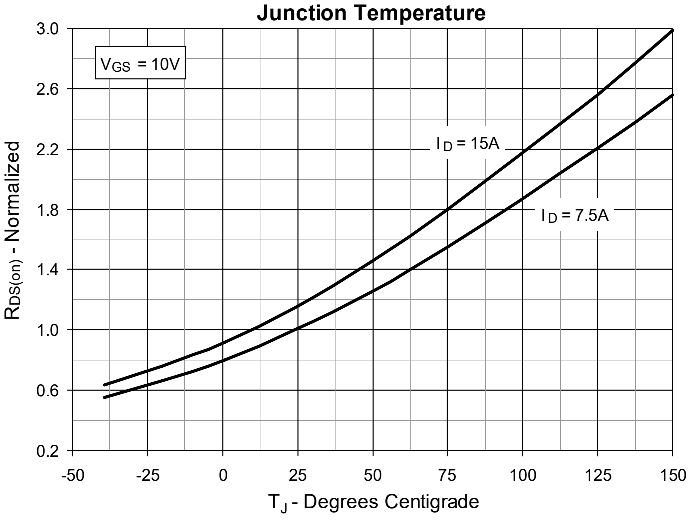

Fig. 5. $R_{DS(on)}$ Normalized to I_D = 7.5A Value vs. Drain Current

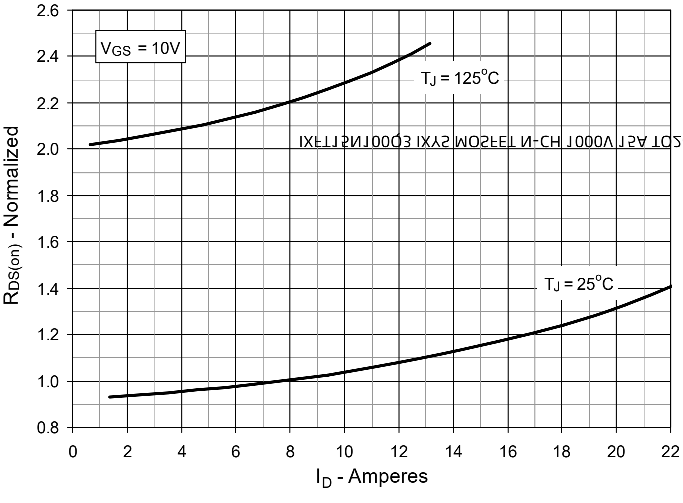

Fig. 6. Maximum Drain Current vs. Case Temperature

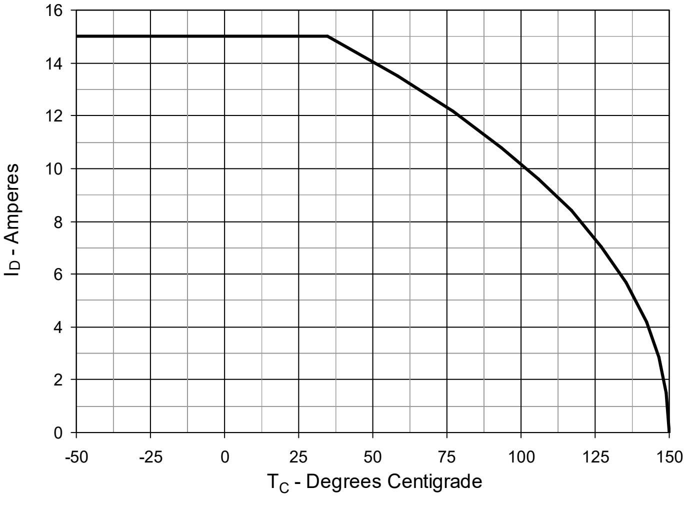

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Fig. 7. Input Admittance

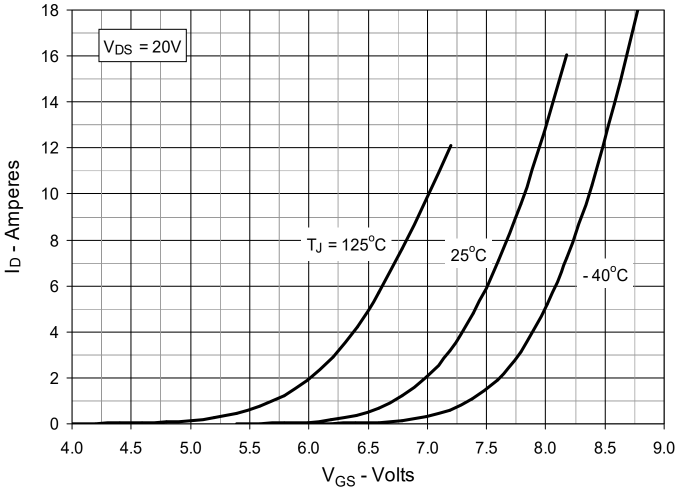

Fig. 8. Transconductance

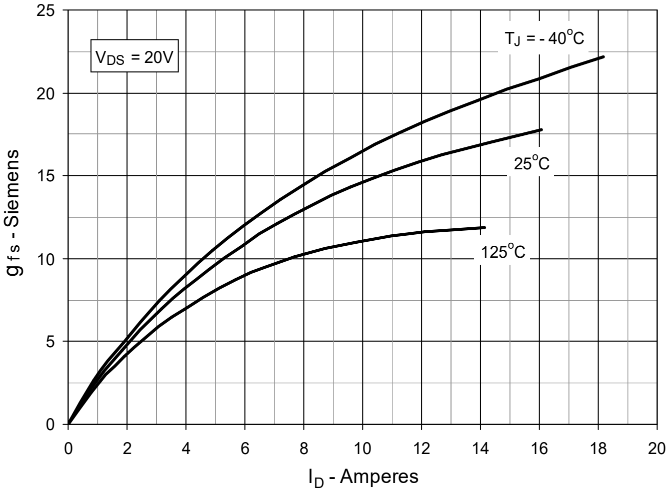

Fig. 9. Forward Voltage Drop of Intrinsic Diode

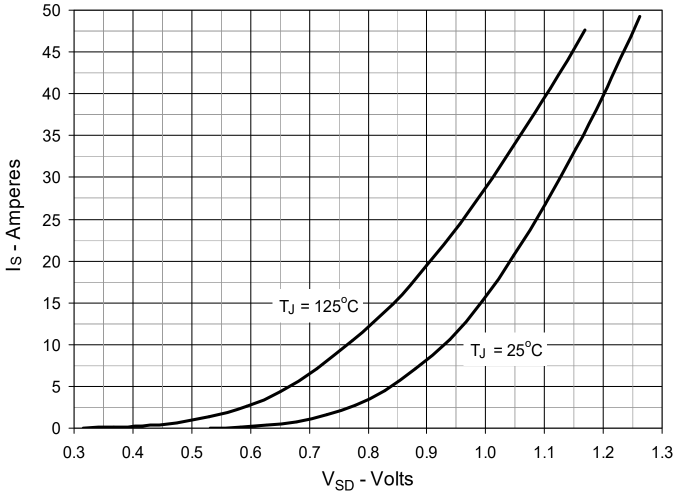

Fig. 10. Gate Charge

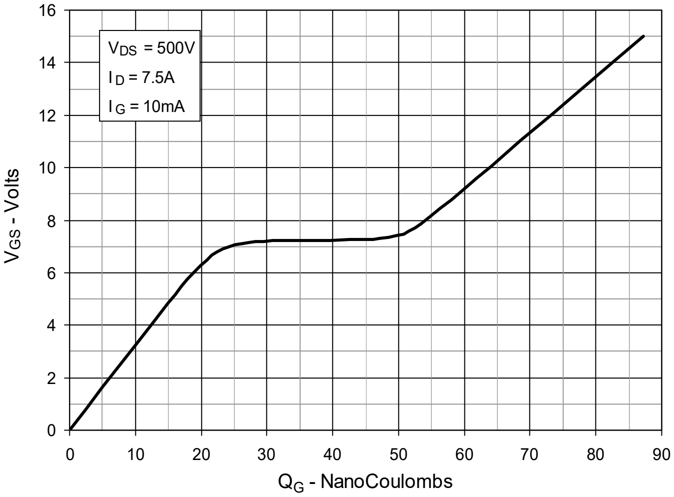

Fig. 11. Capacitance

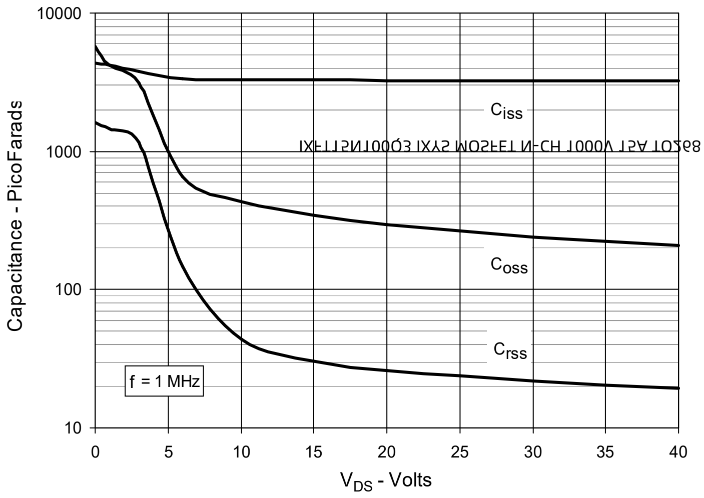

Fig. 12. Forward-Bias Safe Operating Area

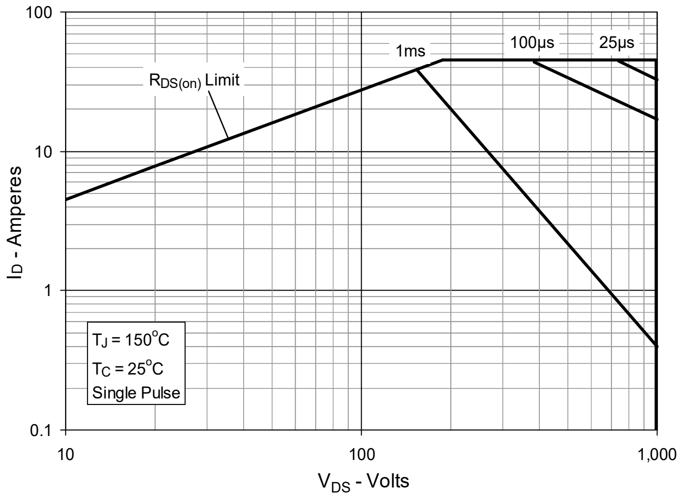

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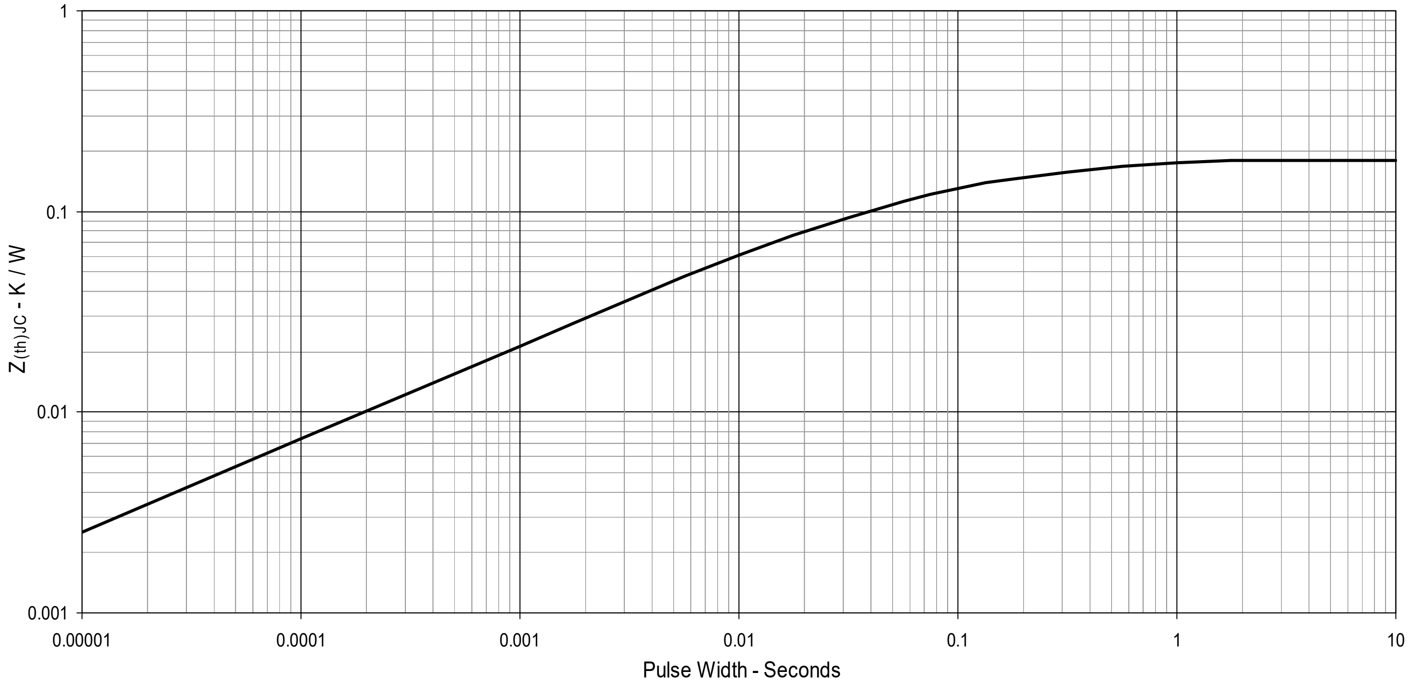
Fig. 13. Maximum Transient Thermal Impedance



IXFT15N100Q3 IXYS MOSFET N-CH 1000V 15A TO268

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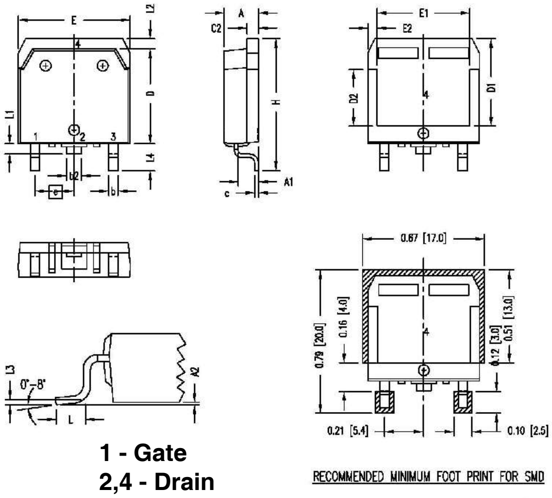
IXYS REF: F_15N100Q3(Q6) 6-28-11

TO-268 Outline

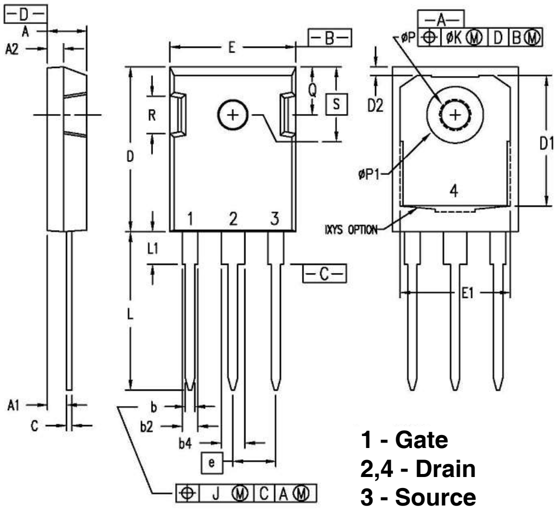


1 - Gate
2,4 - Drain
3 - Source

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.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
C	.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
D2	.320	.335	8.13	8.50
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
E2	.045	.055	1.14	1.39
e	.215 BSC		5.45 BSC	
H	.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

NOTE: ALL METAL SURFACE ARE MATTE PURE TIN PLATED EXCEPT TRIM AREA.
Pb PLATING THICKNESS (4 – 20 um)

TO-247 Outline



1 - Gate
2,4 - Drain
3 - Source

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b2	.075	.087	1.91	2.20
b4	.115	.126	2.92	3.20
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
D1	.650	.690	16.51	17.53
D2	.035	.050	0.89	1.27
E	.620	.635	15.75	16.13
E1	.545	.565	13.84	14.35
e	.215 BSC		5.45 BSC	
J	--	.010	--	0.25
K	--	.025	--	0.64
L	.780	.810	19.81	20.57
L1	.150	.170	3.81	4.32
ØP	.140	.144	3.55	3.65
ØP1	.275	.290	6.99	7.37
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.242 BSC		6.15 BSC	

NOTE: This drawing will meet all dimensions requirement of JEDEC outlines TO-247 AD (R-PSIP-F3)

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I hereby certify that

is this day incorporated in Hong Kong under the Companies Ordinance (Chapter 622 of the Laws of Hong Kong), and that this company is a limited company.

Registrar of Companies
Hong Kong Special Administrative Region

ASA

MEMBERSHIP
Certificate

The Aviation Suppliers Association has enrolled as a Regular Member

DIGI ELECTRONICS HK LIMITED

Michele Dickstein
President

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