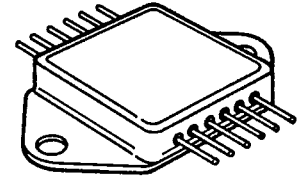




MAXIMUM RATINGS (PER DEVICE)

T-39-13
IXTE12N50X4

12 AMPS, 500 VOLTS, 0.4 OHMS



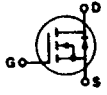
HERMETIC QUADPAC

Parameter	Sym.	IXTE12N50X4	Unit
Drain-Source Voltage (1)	V _{DSS}	500	V _{dc}
Drain-Gate Voltage (R _{GS} = 1.0MΩ) (1)	V _{DGR}	500	V _{dc}
Gate-Source Voltage Continuous	V _{GS}	± 20	V _{dc}
Gate-Source Voltage Transient	V _{GSM}	± 30	V
Drain Current Continuous (T _C = 25°C)	I _D	12	A _{dc}
Drain Current Pulsed (3)	I _{DM}	48	A
Total Power Dissipation	P _D	125	W
Power Dissipation Derating > 25°C		1.0	W/°C
Operating and Storage Temperature	T _J & T _{stg}	-65 to +150	°C
Thermal Resistance	R _{thJC}	1.0	°C/W
Max. Lead Temp. for Soldering	T _L	300 (1.6mm from case for 10 sec.)	°C

ELECTRICAL CHARACTERISTICS T_C = 25°C unless otherwise specified (PER DEVICE)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)DSS} Drain-Source Breakdown Voltage	12N50X4	500	—	—	V	V _{GS} = 0V I _D = 250μA
V _{GS(th)} Gate Threshold Voltage	ALL	2.0	—	4.5	V	V _{DS} = V _{GS} , I _D = 250μA
I _{GSS} Gate-Source Leakage	ALL	—	—	100	nA	V _{GS} = ±20V
I _{DSS} Zero Gate Voltage Drain Current	ALL	—	—	200	μA	V _{DS} = 0.8 BV _{DSS} , V _{GS} = 0V
		—	—	1000	μA	V _{DS} = 0.8 BV _{DSS} , V _{GS} = 0V, T _C = 125°C
R _{DS(on)} Static Drain-Source On-State Resistance (2)	ALL	—	—	0.4	Ω	V _{GS} = 10V, I _D = 0.5 I _D Max.
g _{FS} Forward Transconductance (2)	ALL	6	—	—	S	V _{DS} > I _{D(on)} x R _{DS(on)max} , I _D = 0.5 I _D Max.
C _{iss} Input Capacitance	ALL	—	—	3200	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1.0 MHz
C _{oss} Output Capacitance	ALL	—	—	400	pF	
C _{rss} Reverse Transfer Capacitance	ALL	—	—	100	pF	
t _{d(on)} Turn-On Delay Time	ALL	—	—	70	ns	V _{DD} = 0.5 BV _{DSS} , I _D = 0.5 I _D Max. Z _O = 50Ω (MOSFET switching times are essentially independent of operating temperature.)
t _r Rise Time	ALL	—	—	70	ns	
t _{d(off)} Turn-Off Delay Time	ALL	—	—	155	ns	
t _f Fall Time	ALL	—	—	65	ns	
Q _g Total Gate Charge (Gate-Source Plus Gate-Drain)	ALL	—	—	60	nC	V _{GS} = 10V, I _D = I _D Max., V _{DS} = 0.8 BV _{DSS} . (Gate charge is essentially independent of operating temperature.)
Q _{gs} Gate Source Charge	ALL	—	—	20	nC	
Q _{gd} Gate-Drain ("Miller") Charge	ALL	—	—	40	nC	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS T_C = 25°C unless otherwise specified (PER DEVICE)

I _S Continuous Source Current (Body Diode)	ALL	—	—	12	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier. 
I _{SM} Pulse Source Current (Body Diode) (1)	ALL	—	—	48	A	
V _{SD} Diode Forward Voltage (2)	ALL	—	—	1.5	V	I _F = I _S , V _{GS} = 0V
t _{rr} Reverse Recovery Time	ALL	—	400	—	ns	V _R = 100V
Q _{rr} Reverse Recovery Charge	ALL	—	7.4	—	uC	T _J = 25°C
		—	14.8	—		T _J = 150°C

(1) T_J = 25°C to 150°C

(2) Pulse test: Pulse width ≤ 300μs, duty cycle ≤ 2%

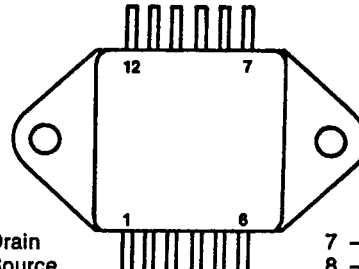
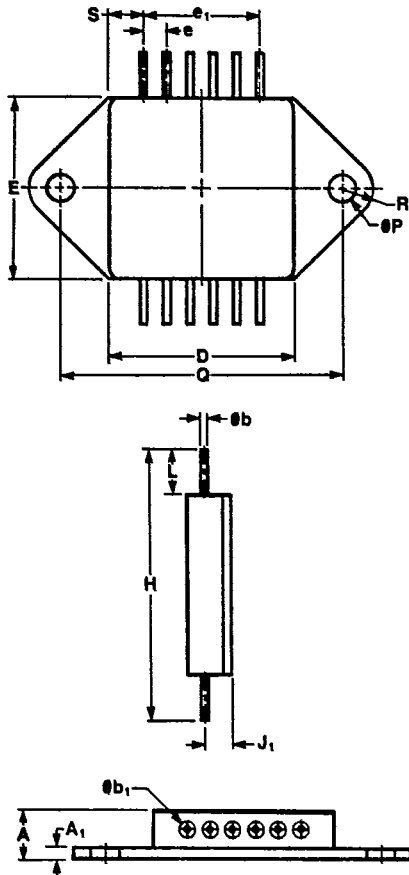
(3) Repetitive rating: Pulse width limited by max. junction temperature.

T-91-20

PACKAGE OUTLINE

QUADPAC AA (STRAIGHT LEAD)

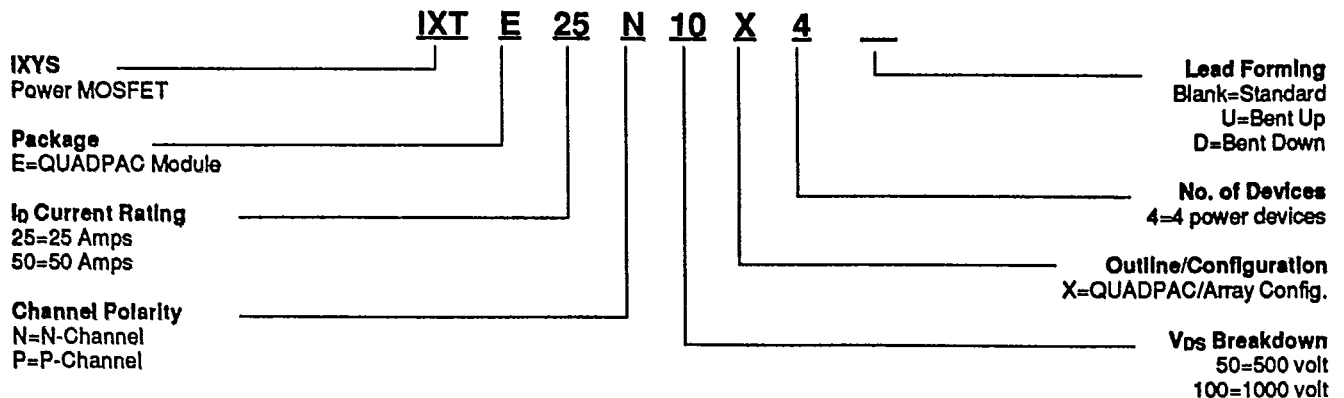
- Notes:
 1) Controlling dimensions: inch. In case of conflict between the English and metric dimensions, the inch dimensions control.
 2) Dimensioning and tolerancing per ANSI Y14.54-1982.
 3) Symbols are defined in the "No Series Symbol List" in Section 2-2 of publication no. 95.
 4) Lid offset dimension not included.



- 1 - Drain
 2 - Source
 3 - Gate
 4 - Gate
 5 - Source
 6 - Drain
 7 - Drain
 8 - Source
 9 - Gate
 10 - Gate
 11 - Source
 12 - Drain
- CASE NO CONNECTION

Dim. (Straight Lead)	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	.240	.280	6.10	7.11
A ₁	.045	.055	1.14	1.40
Øb	.035	.045	0.89	1.14
Øb ₁	.080	.105	2.03	2.67
D	.980	1.020	24.89	25.91
E	.980	1.020	24.89	25.91
e	.125 BSC.		3.18 BSC.	
e ₁	.625 BSC.		15.88 BSC.	
H	1.480	1.520	37.59	38.61
J ₁	.148	.168	3.77	4.27
L	.240	.260	6.10	6.60
ØP	.151	.161	3.84	4.09
Q	1.506	1.530	38.27	38.88
R	.165	.175	4.19	4.44
S	.180	.196	4.57	4.98

PART NUMBER DESCRIPTION



Note: Valid combinations are only those referenced in the IXYS price book or Product Selector Guide. Consult your local IXYS sales office to confirm availability of specific combinations or new types.