



ADVANCED TECHNICAL DATA SHEET*

DATA SHEET NO. 41012B

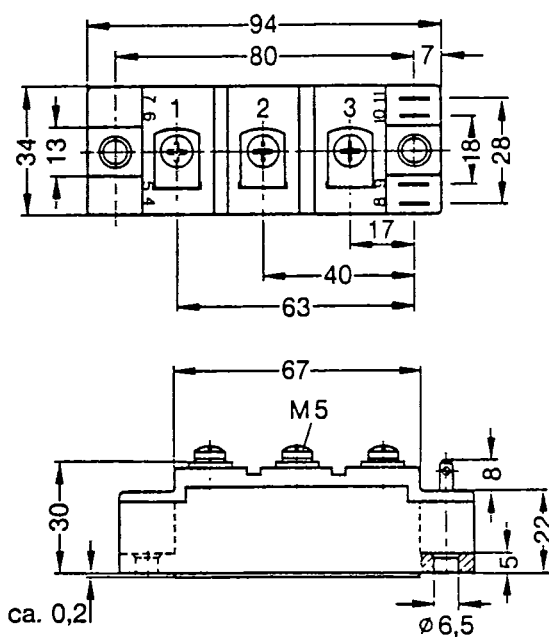
MOSBLOC™ IGBT MODULE

IXGQ25N50Y4

MAXIMUM RATINGS (TC = 25 °C unless otherwise indicated)

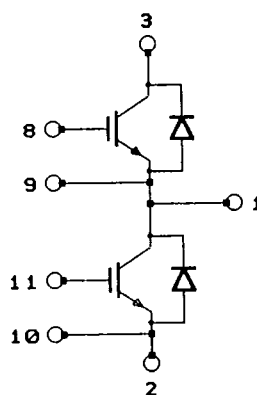
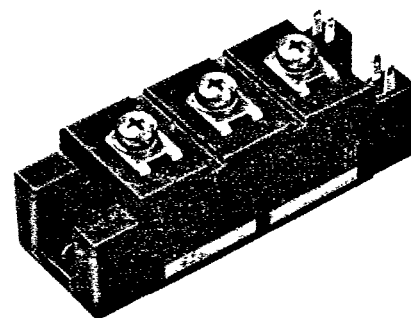
Rating	Conditions	Symbol	Value	Unit
Collector-Emitter Voltage		V _{CES}	500	V
Gate-Emitter Voltage (Continuous)		V _{GES}	±20	V
Collector Current (IGBT)	DC, T _C = 25 °C	I _C	25	A
	DC, T _C = 85 °C	I _C	20	A
Collector Surge Current (IGBT)	1 mSec	I _{CM}	50	A
Diode Forward Current	DC	I _F	25	A
Diode Surge Current	1 mSec	I _{FM}	50	A
Maximum Junction Temperature		T _J	150	°C
Storage Temperature		T _{stg}	-40 to +125	°C
Thermal Resistance (IGBT)		R _{thJC}	0.8	K/W
Collector Power Dissipation		P _C	150	W
Derating (IGBT)			1.2	W/°C
Thermal Resistance (Diode)		R _{thJC}	3.0	K/W
Isolation Voltage	AC for 1 min.	V _{ISOL}	2500	V
Screw Torque (Mounting) (Terminals)		M _M	22	in-lb
		M _T	33	in-lb

OUTLINE DRAWING



NOTE: DIMENSIONS IN mm (1 mm = 0.0394")

CIRCUIT DIAGRAM

Y4 PACKAGE
(94mm X 34mm)

IXYS Corporation

2355 Zanker Rd., San Jose, CA 95131-1109

TEL: (408) 435-1900 • TLX: 384928 IXYS SNJ UD • FAX: (408) 435-0670

ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

CHARACTERISTIC	TEST CONDITION		SYMBOL	MIN	TYP	MAX	UNIT
Collector-Emitter Breakdown Voltage (1)	$V_{GE} = 0\text{ V}; I_C = 1\text{ mA}$		$V_{(BR)CES}$	500			V
Collector Cut-off Current	$V_{CE} = 500\text{ V}; V_{GE} = 0\text{ V}; T_J = 25^{\circ}\text{C}$		I_{CES}		0.5	1.0	mA
	$V_{CE} = 400\text{ V}; V_{GE} = 0\text{ V}; T_J = 125^{\circ}\text{C}$		I_{CES}		6	10	mA
Gate Threshold Voltage	$I_C = 0.25\text{ mA}; V_{CE} = V_{GE}$		$V_{GE(th)}$	2.5		5.0	V
Gate-Emitter Leakage Current (4)	$V_{GE} = \pm 20\text{ V}; V_{CE} = 0$		I_{GES}			500	nA
Collector-Emitter Saturation Voltage	$I_C = 25\text{ A}$ $V_{GE} = 15\text{ V}$	$T_C = 25^{\circ}\text{C}$	$V_{CE(sat)}$		3.0	3.5	V
		$T_C = 125^{\circ}\text{C}$	$V_{CE(sat)}$		3.5	4.0	V
Input Capacitance	$V_{CE} = 10\text{ V}$		C_{ies}		3.5		nF
Reverse Transfer Capacitance	$V_{GE} = 0\text{ V}$ $f = 1.0\text{ MHz}$		C_{res}		70		pF
Fall Time	LOAD = INDUCTIVE $I_C = 25\text{ A}$ $V_{CC} = 350\text{ V}$ $R_G = 100\ \Omega$	$T_J = 25^{\circ}\text{C}$	t_f		300		nS
Rise Time			t_r		300		nS
Turn-off Delay			$t_{d(off)}$		1000		nS
Turn-off Energy		$T_J = 125^{\circ}\text{C}$	E_{off}				mJ

DIODE CHARACTERISTICS

CHARACTERISTIC	TEST CONDITION		SYMBOL	MIN	TYP	MAX	UNIT
Repetitive Reverse Voltage (3)			V _{RRM}			500	V
Forward Voltage (2)	I _F = 25 A; V _{GE} = 0 V		V _F			1.5	V
Reverse Recovery Time	I _F = 25 A di/dt = 100 A/μS V _{GE} = -10 V V _{RR} = 350 V	T _J = 25 °C	t _{rr}		60		nS
		T _J = 125 °C	t _{rr}		100		nS
Reverse Recovery Charge		T _J = 25 °C	q _{rr}		40		nC
		T _J = 125 °C	q _{rr}		120		nC

NOTES:

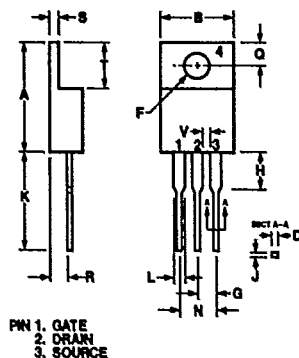
- $T_J = 25^{\circ}\text{C}$ to 150°C
- Pulse test: Pulse width $\leq 300\mu\text{S}$, duty cycle $\leq 2\%$
- Repetitive rating: Pulse width limited by maximum junction temperature.
- Gate-Emitter Voltage Transient (V_{GE}) = $\pm 30\text{ V}$.

*The data supplied herein reflects the Design Technical Objective Specification. The subject products are in Product Development. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

DETAILED PACKAGE OUTLINES

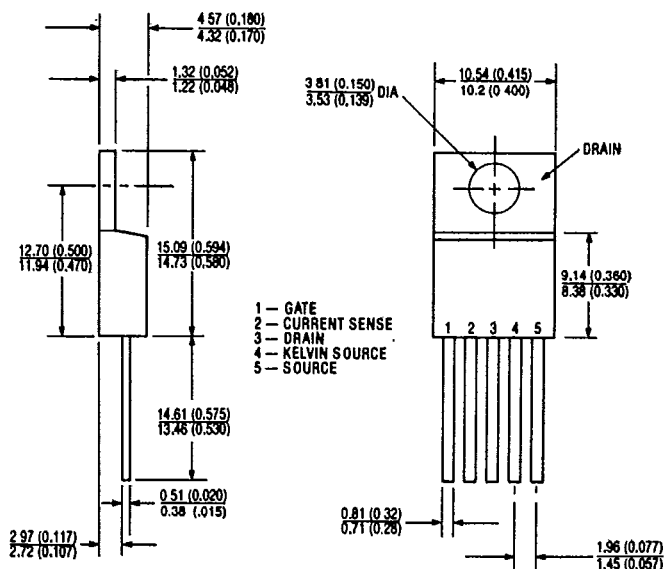
T-91-20

TO-220 AB

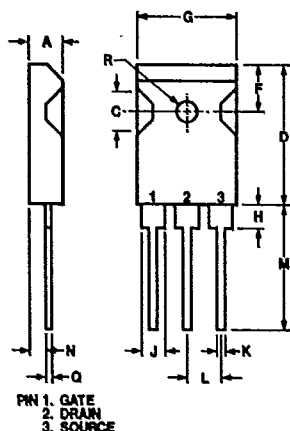


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	14.23	16.51	.560	.650
B	9.66	10.66	.380	.420
C	3.56	4.82	.140	.190
D	0.64	0.89	.025	.035
F	3.54	4.08	.139	.161
G	2.29	2.79	.090	.110
H	—	6.35	—	.250
J	0.51	.76	.020	.030
K	12.70	14.73	.500	.580
L	1.15	1.77	.045	.070
N	4.83	5.33	.190	.210
Q	2.54	3.42	.100	.135
R	2.04	2.49	.080	.115
S	0.64	1.39	.025	.055
T	5.85	6.85	.230	.270
V	1.15	—	.045	—

CONFORMS TO OUTLINE TO-220 (IR H-7)
Dimensions in Millimeters (Inches)

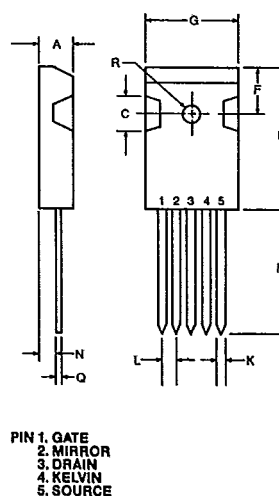


TO-247 (3 LEADED)



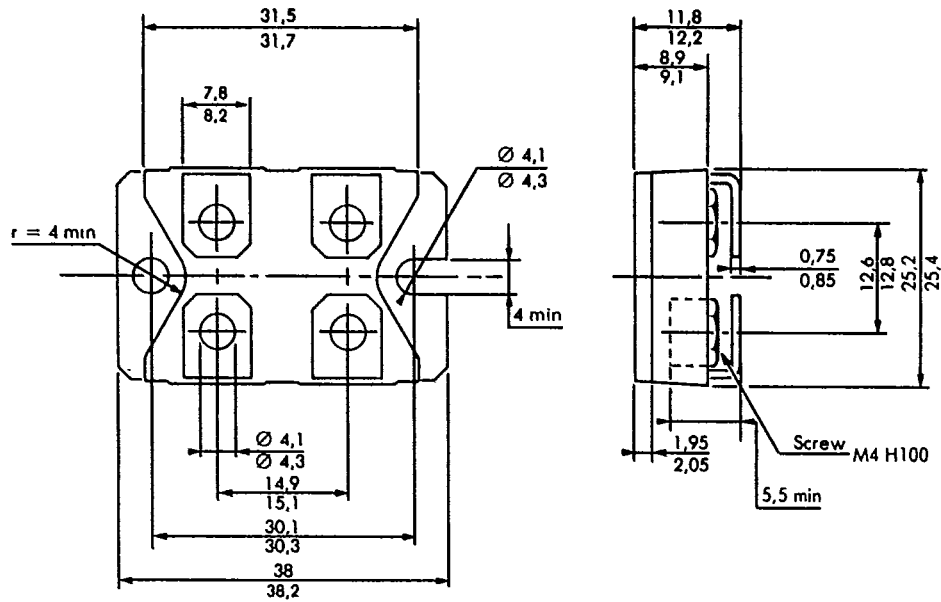
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
C	4.5	6.0	.178	.236
D	19.7	21.4	.776	.843
F	5.3	6.1	.209	.240
G	15.3	15.9	.602	.625
H	3.7	4.3	.146	.169
J	1.95	2.4	.077	.094
J ₁	2.97	3.4	.117	.134
K	1.0	1.4	.040	.055
L	5.4	5.5	.213	.217
M	19.9	20.2	.783	.795
N	2.2	2.6	.087	.102
Q	0.4	0.8	.016	.031
R	2.9	3.3	.114	.129

TO-247 (5 LEADED)

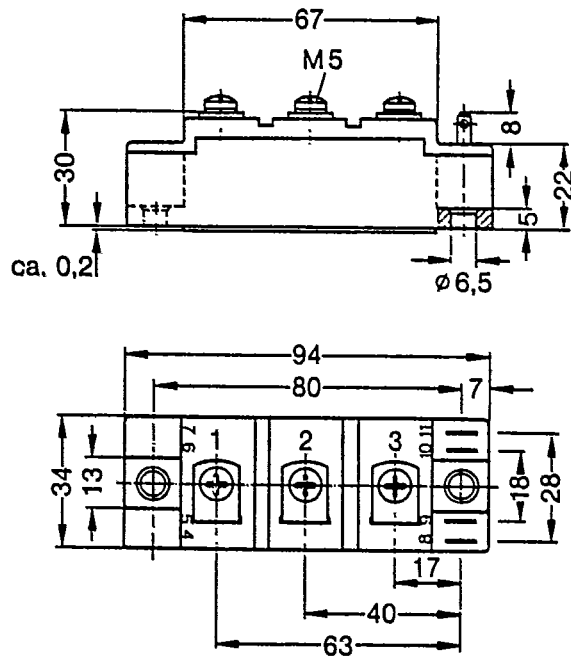


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
C	4.5	6.0	.178	.236
D	19.7	21.4	.776	.843
F	5.3	6.1	.209	.240
G	15.3	15.9	.602	.625
K	1.1	1.3	.043	.051
L	2.51	2.56	.099	.101
M	19.9	20.2	.783	.795
N	2.2	2.6	.087	.102
Q	0.4	0.8	.016	.031
R	2.9	3.3	.114	.129

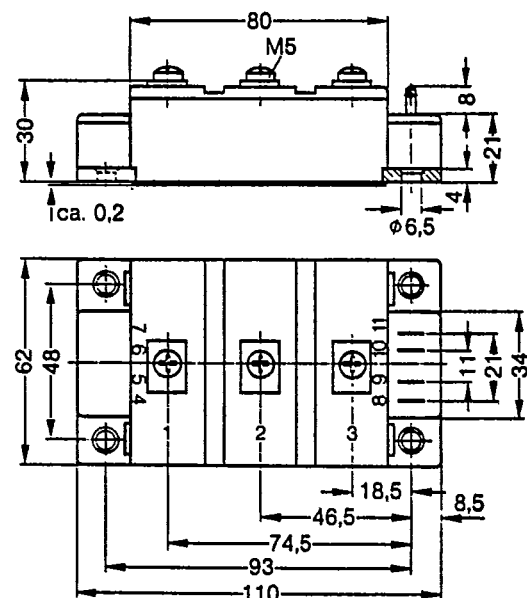
TO-238
Dimensions in Millimeters



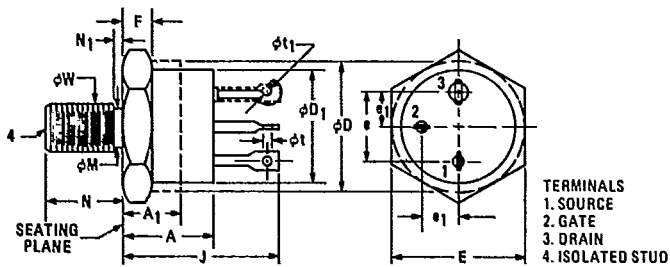
Y-4
Dimensions in Millimeters



Y-3
Dimensions in Millimeters



CONFORMS TO JEDEC OUTLINE TO-210AC (TO-61) Dimensions in Millimeters (Inches)



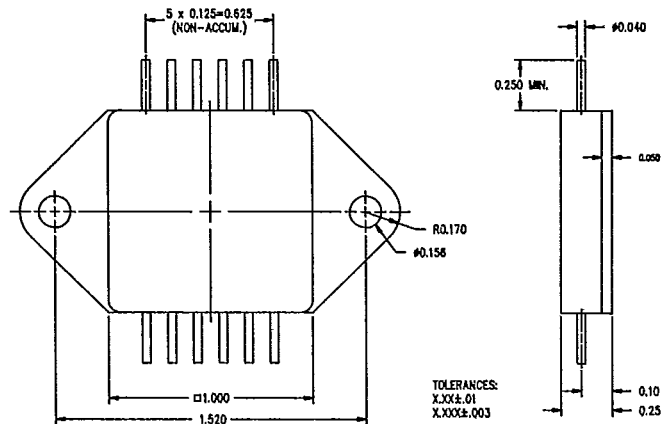
Symbol	Inches Min.	Inches Max.	Millimeters Min.	Millimeters Max.	Notes
A	0.325	0.450	8.26	11.68	
A ₁		0.270		6.86	2
ϕD	0.610	0.687	15.49	17.45	2
ϕD ₁	0.570	0.610	14.48	15.49	
E	0.667	0.687	16.94	17.45	
e	0.340	0.415	8.64	10.54	5
e ₁	0.170	0.213	4.32	5.41	5
F	0.090	0.150	2.29	3.81	1

Symbol	Inches Min.	Inches Max.	Millimeters Min.	Millimeters Max.	Notes
J	0.640	0.875	16.26	22.23	
ϕM	0.220	0.249	5.59	6.32	
N	0.422	0.455	10.72	11.56	
N ₁		0.090		2.29	
ϕt	0.055	0.072	1.19	1.83	
ϕt ₁	0.046	0.077	1.17	1.96	4
ϕW	0.2225	0.2268	5.661	5.761	3

NOTES

1. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
2. PACKAGE CONTOUR OPTIONAL WITHIN DIMENSIONS SPECIFIED.
3. PITCH DIAMETER - THREAD 1/4 28 UNF 2A (COATED).
REFERENCE ISCREW THREAD STANDARDS FOR FEDERAL SERVICES - HANDBOOK H 281.
4. THIS TERMINAL CAN BE FLATTENED AND PIERCED OR HOOK TYPE.
5. POSITION OF LEADS IN RELATION TO THE HEXAGON IS NOT CONTROLLED.

QUADPAC



Z-Pac

