



MAXIMUM RATINGS

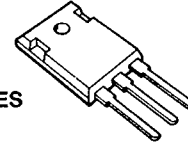
Parameter	Sym.	IXTH19N45 IXTM19N45	IXTH19N50 IXTM19N50	Unit
Drain-Source Voltage (1)	V _{DSS}	450	500	V _{dc}
Drain-Gate Voltage (R _{GS} = 1.0MΩ) (1)	V _{DGR}	450	500	V _{dc}
Gate-Source Voltage Continuous	V _{GS}		± 20	V _{dc}
Gate-Source Voltage Transient	V _{GSM}		± 30	V
Drain Current Continuous (T _C = 25°C)	I _D		19	A _{dc}
Drain Current Pulsed (3)	I _{DM}		76	A
Total Power Dissipation	P _D		250	W
Power Dissipation Derating > 25°C			2.0	W/°C
Operating and Storage Temperature	T _J & T _{stg}		-65 to +150	°C
Thermal Resistance	R _{thJC}		0.5	°C/W
Max. Lead Temp. for Soldering	T _L	300 (1.6mm from case for 10 sec.)		°C

T-39-15

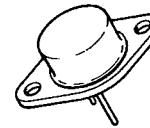
MegaMOS™ FETs

IXTH19N50, 45
IXTM19N50, 45

19 Amps, 450–500V, 0.3Ω



IXTH SERIES
TO-247
(TO-3P)

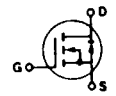


IXTM SERIES
TO-204
(TO-3)

ELECTRICAL CHARACTERISTICS T_C = 25°C unless otherwise specified

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)DSS} Drain-Source Breakdown Voltage	19N50	500	—	—	V	V _{GS} = 0V
	19N45	450	—	—	V	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	—	—	0.3	Ω	V _{GS} = 10V, I _D = 0.5 I _D Max.
g _{FS} Forward Transconductance (2)	ALL	11.0	13.0	—	S	V _{DS} > I _{D(on)} x R _{DS(on)max.} , I _D = 0.5 I _D Max.
C _{iss} Input Capacitance	ALL	—	—	4000	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1.0 MHz
C _{oss} Output Capacitance	ALL	—	—	500	pF	
C _{rss} Reverse Transfer Capacitance	ALL	—	—	140	pF	
t _{d(on)} Turn-On Delay Time	ALL	—	—	90	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. See Fig. 7, page 56 for test circuit.)
t _r Rise Time	ALL	—	—	110	ns	
t _{d(off)} Turn-Off Delay Time	ALL	—	—	200	ns	
t _f Fall Time	ALL	—	—	95	ns	
Q _g Total Gate Charge (Gate-Source Plus Gate-Drain)	ALL	—	150	—	nC	V _{GS} = 10V, I _D = I _D Max., V _{DS} = 0.8 BV _{DSS} , (Gate charge is essentially independent of operating temperature. See Fig. 8, page 56 for test circuit.)
Q _{gs} Gate Source Charge	ALL	—	60	—	nC	
Q _{gd} Gate-Drain ("Miller") Charge	ALL	—	90	—	nC	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS T_C = 25°C unless otherwise specified

I _S Continuous Source Current (Body Diode)	ALL	—	—	19	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier. 
I _{SM} Pulse Source Current (Body Diode) (1)	ALL	—	—	76	A	
V _{SD} Diode Forward Voltage (2)	ALL	—	—	1.5	V	I _F = I _S , V _{GS} = 0V
t _{rr} Reverse Recovery Time	ALL	—	500	—	ns	V _R = 100V
Q _{rr} Reverse Recovery Charge	ALL	—	7.0	—	uC	T _J = 25°C
		—	14	—		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-39-15



IXTH19N50, 45
IXTM19N50, 45

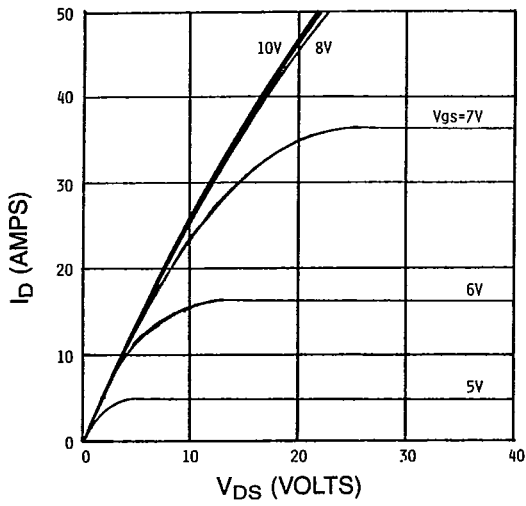


Figure 1. Output Characteristics

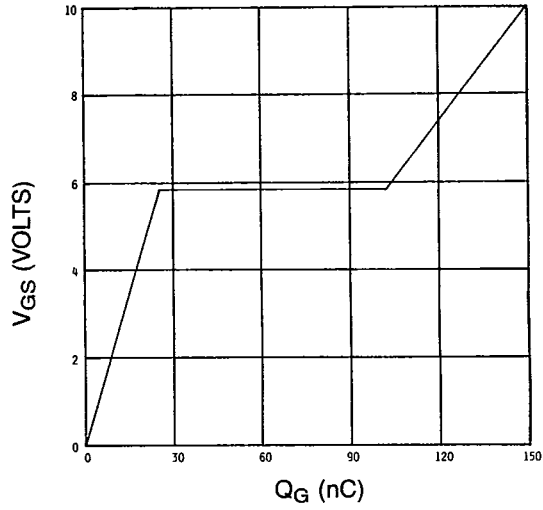


Figure 2. Gate Charge Vs V_{GS}

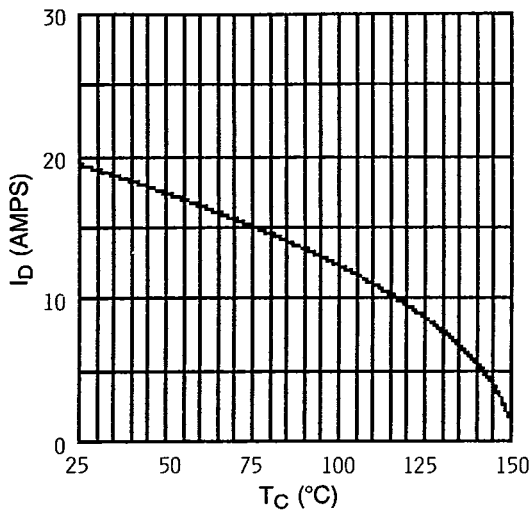


Figure 3. I_D Vs Case Temperature

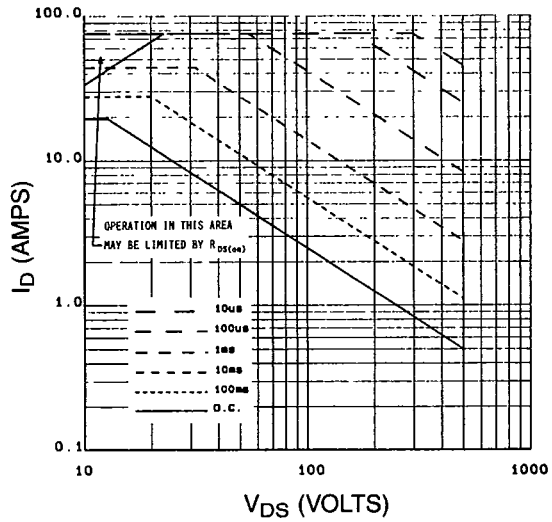


Figure 4. Safe Operating Area

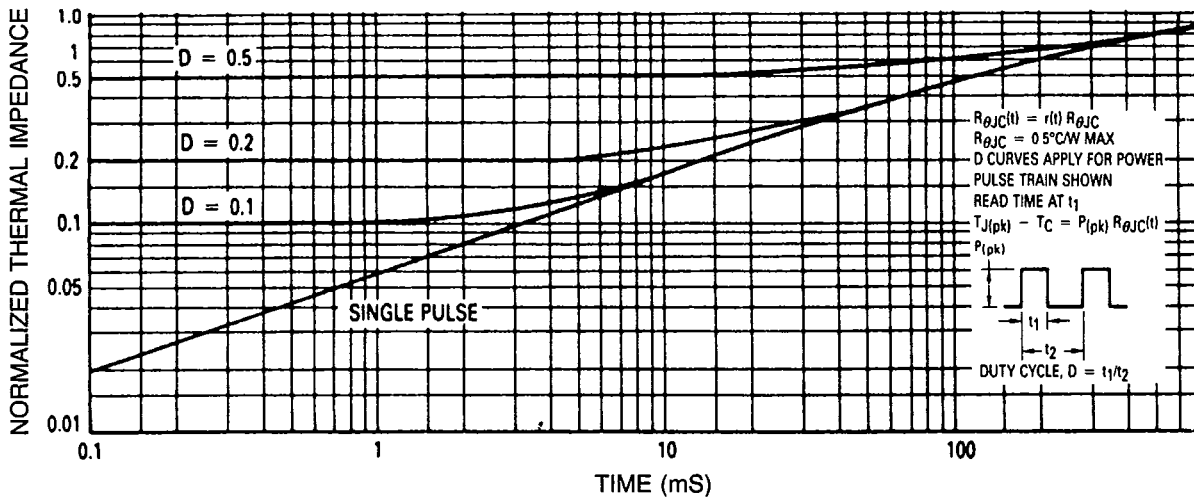
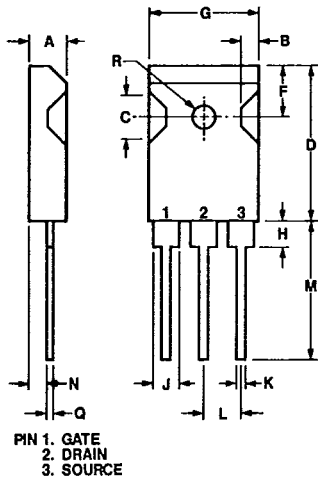


Figure 5. Transient Thermal Impedance

PACKAGE OUTLINES AND PINOUTS

T-91-20

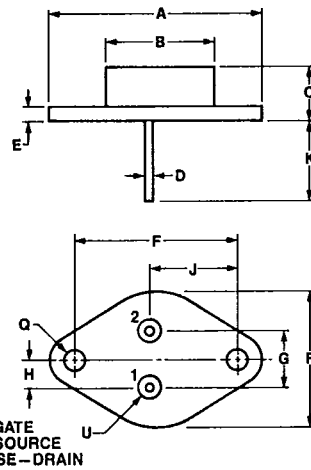
TO-247



PIN 1. GATE
2. DRAIN
3. SOURCE

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.8	5.2	.187	.203
B	1.7	2.7	.067	.106
C	3.1	3.9	.121	.152
D	20.8	21.2	.811	.827
F	5.8	6.2	.226	.242
G	15.7	15.9	.612	.620
H	—	4.5	—	.177
J	1.97	2.01	.077	.078
J ₁	2.97	3.01	.116	.119
K	1	1.4	.039	.055
L	5.25	5.65	.207	.222
M	19.8	20.2	.772	.778
N	2.2	2.4	.086	.094
Q	.4	.8	.016	.031
R	3.1	3.3	.121	.129

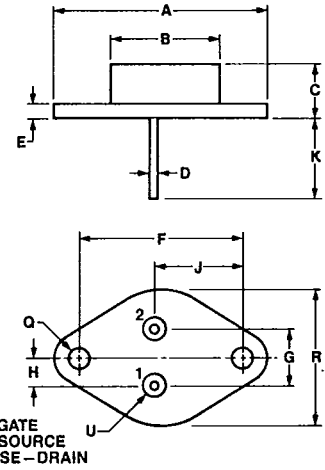
TO-204 AA



PIN 1. GATE
2. SOURCE
CASE-DRAIN

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	—	39.37	—	1.55
B	—	19.71	—	.776
C	8.96	9.22	.353	.363
D	.097	1.09	.038	.043
E	2.66	2.92	.105	.115
F	30.15	BSC	1.187	BSC
G	10.74	11.05	.423	.435
H	5.46	BSC	.215	BSC
J	16.68	17.12	.657	.674
K	11.20	11.98	.441	.472
Q	3.86	4.11	.152	.162
R	24.84	25.27	.978	.995
U	4.19	5.56	.165	.203

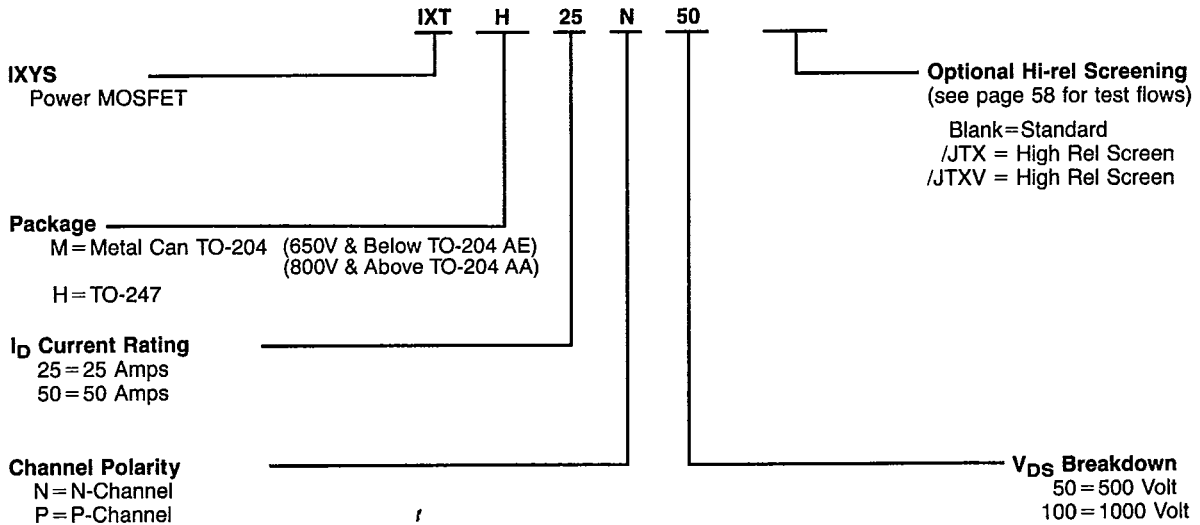
TO-204 AE



PIN 1. GATE
2. SOURCE
CASE-DRAIN

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	—	39.37	—	1.55
B	—	19.71	—	.776
C	8.96	9.22	.353	.363
D	1.45	1.63	.58	.062
E	2.66	2.92	.105	.115
F	30.15	BSC	1.187	BSC
G	10.74	11.05	.423	.435
H	5.46	BSC	.215	BSC
J	16.68	17.12	.657	.674
K	11.20	11.98	.441	.472
Q	3.86	4.11	.152	.162
R	24.84	25.27	.978	.995
U	4.19	5.56	.165	.203

PART NUMBER DESCRIPTION

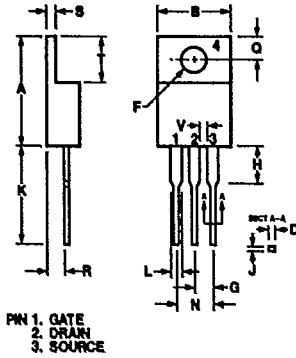


Note: Valid combinations are only those referenced in the IXYS price book or product selector guide. Consult your local IXYS sales office to confirm availability of specific combinations or new types.

DETAILED PACKAGE OUTLINES

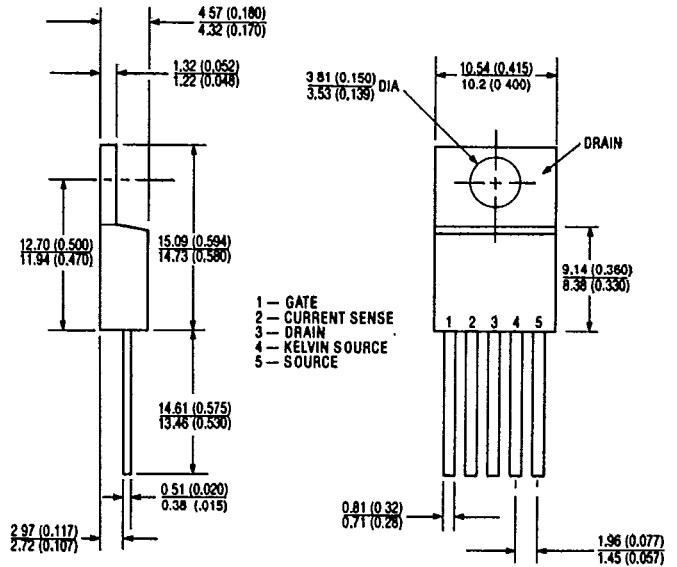
T-91-20

TO-220 AB

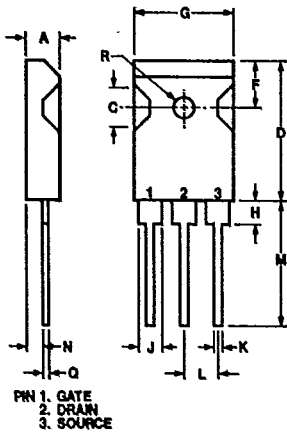


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	14.23	16.51	.560	.650
B	9.66	10.66	.380	.420
C	3.56	4.82	.140	.190
D	0.64	0.89	.025	.035
F	3.54	4.08	.139	.161
G	2.29	2.79	.090	.110
H	-	6.35	-	.250
J	0.51	.76	.020	.030
K	12.70	14.73	.500	.580
L	1.15	1.77	.045	.070
N	4.83	5.33	.190	.210
Q	2.54	3.42	.100	.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)

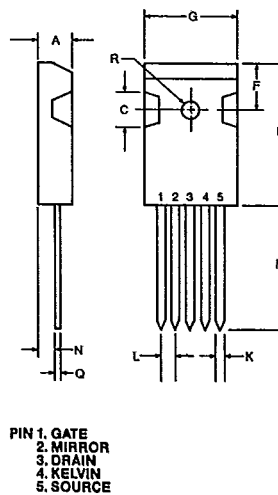


TO-247 (3 LEADED)



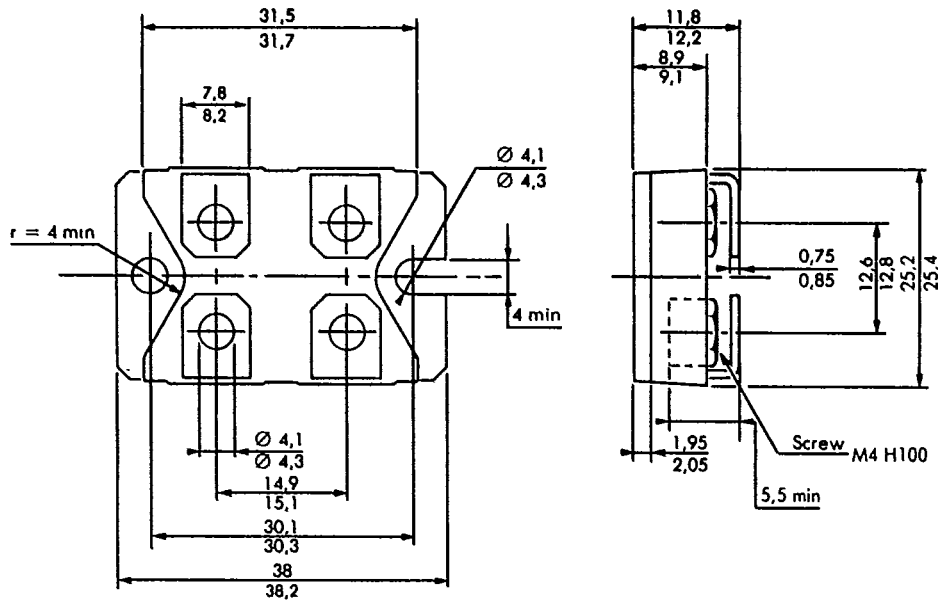
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
C	4.5	6.0	.178	.236
D	19.7	21.4	.776	.843
F	5.3	6.1	.209	.240
G	15.3	15.9	.602	.625
H	3.7	4.3	.146	.169
J	1.95	2.4	.077	.094
J ₁	2.97	3.4	.117	.134
K	1.0	1.4	.040	.055
L	5.4	5.5	.213	.217
M	19.9	20.2	.783	.795
N	2.2	2.6	.087	.102
Q	0.4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

TO-247 (5 LEADED)

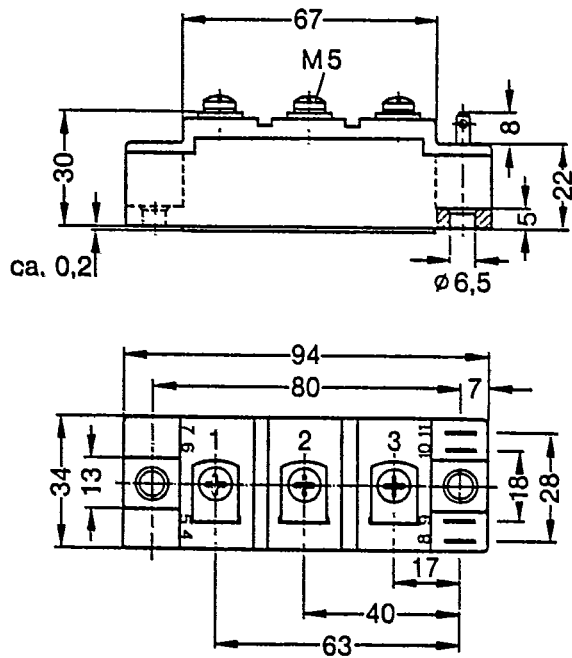


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
C	4.5	6.0	.178	.236
D	19.7	21.4	.776	.843
F	5.3	6.1	.209	.240
G	15.3	15.9	.602	.625
K	1.1	1.3	.043	.051
L	2.51	2.56	.099	.101
M	19.9	20.2	.783	.795
N	2.2	2.6	.087	.102
Q	0.4	0.8	.016	.031
R	2.9	3.3	.114	.129

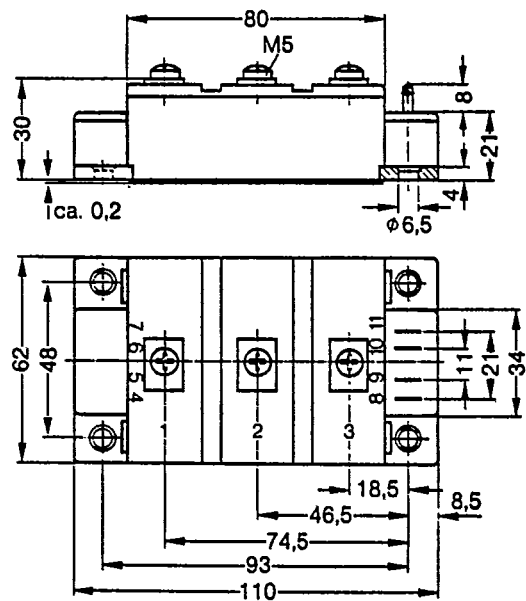
TO-238
Dimensions in Millimeters



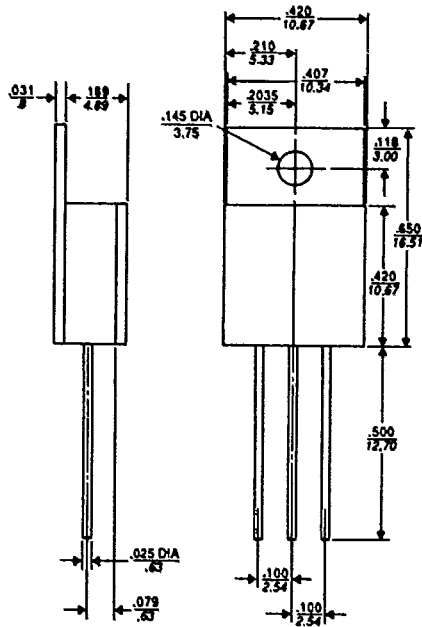
Y-4
Dimensions in Millimeters



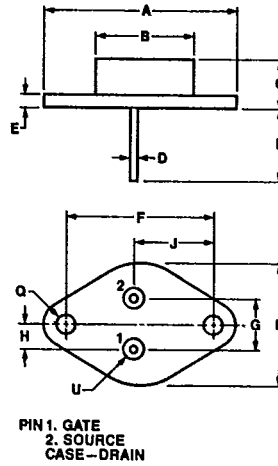
Y-3
Dimensions in Millimeters



TO-220 HERMETIC

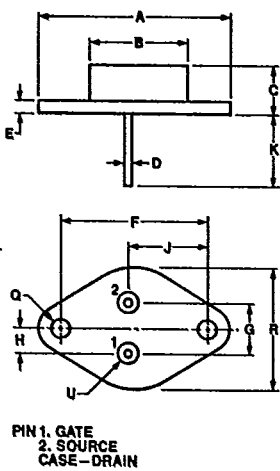


TO-204 AE



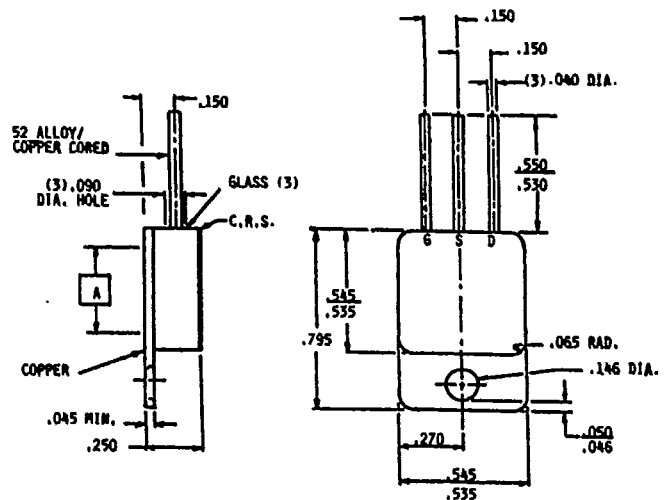
Dim.	Millimeter	Max.	Inches	Max.
A	—	39.37	—	1.55
B	—	19.71	—	.776
C	7.62	10.16	.300	.400
D	1.47	1.57	.058	.062
E	1.52	3.43	.060	.135
F	30.15	BSC	1.187	BSC
G	10.67	11.18	.420	.440
H	5.33	6.10	.210	.240
J	16.68	17.12	.657	.674
K	11.20	11.98	.441	.472
Q	3.86	4.11	.152	.162
R	24.84	25.27	.978	.995

TO-204 AA

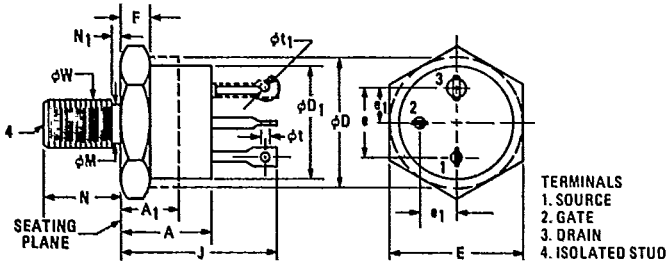


Dim.	Millimeter	Max.	Inches	Max.
A	—	39.37	—	.155
B	—	19.71	—	.776
C	6.35	8.89	.250	.350
D	.097	1.09	.038	.043
E	—	3.43	—	.135
F	30.15	BSC	1.187	BSC
G	10.67	11.18	.420	.440
H	5.33	6.10	.210	.240
J	16.68	17.12	.657	.674
K	11.20	11.98	.441	.472
Q	3.86	4.11	.152	.162
R	24.84	25.47	.978	1.00

TO-254 HERMETIC



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



TERMINALS
1. SOURCE
2. GATE
3. DRAIN
4. ISOLATED STUD

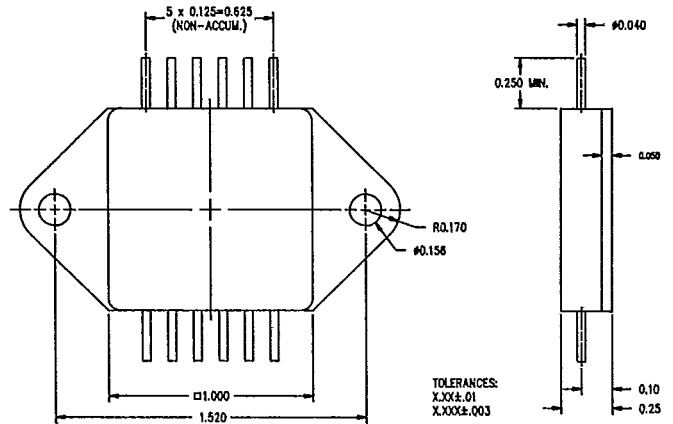
Symbol	Inches		Millimeters		Notes
	Min.	Max.	Min.	Max.	
A	0.325	0.450	8.26	11.68	
A ₁	0.270		6.86		2
φD	0.610	0.687	15.49	17.45	2
φD ₁	0.570	0.610	14.48	15.49	
E	0.667	0.687	16.94	17.45	
e	0.340	0.415	8.64	10.54	5
e ₁	0.170	0.213	4.32	5.41	5
F	0.090	0.150	2.29	3.81	1

Symbol	Inches		Millimeters		Notes
	Min.	Max.	Min.	Max.	
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	0.2768	5.561	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

