RU75N08

N-Channel Advanced Power MOSFET

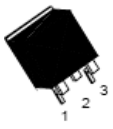
Features

- 75V/80A,
  $R_{DS\,(ON)}$ =8mΩ V_{GS}=10V I_{DS}=40A
- Ultra Low On-Resistance
- Exceptional dv/dt capability
- Fast Switching and Fully Avalanche Rated
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Available

Pin Description

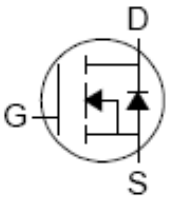
TO-220

TO-220F



TO-263

TO-247



N-Channel MOSFE

Applications

- Switching Application Systems

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		75	V
V_{GSS}	Gate-Source Voltage		±25	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	80	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_C=25°C	360*	A
I_D	Continuous Drain Current	T_C=25°C	80	A
		T_C=100°C	76	
P_D	Maximum Power Dissipation	T_C=25°C	280	W
		T_C=100°C	140	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.5	°C/W
Drain-Source Avalanche Ratings				
E_{AS}	Avalanche Energy, Single Pulsed (L=2mH)		1.2	J

Note：* Current limited by Safe operating area.

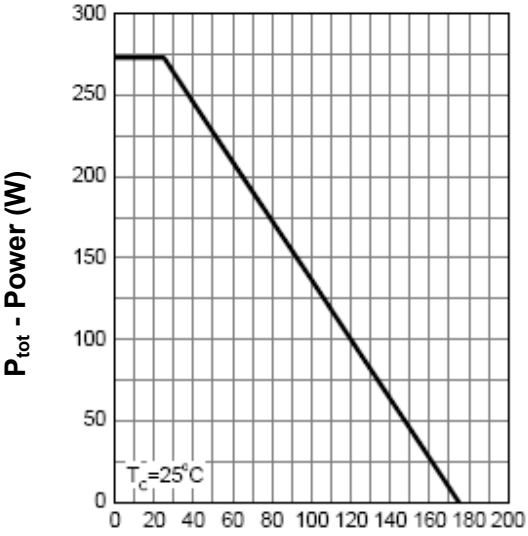
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU75N08			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	75			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 70V, V_{GS}=0V			1	μA
		T_J=85°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V			±100	μA
$R_{DS(ON)}$ [a]	Drain-Source On-state Resistance	V_{GS}= 10V, I_{DS}=40A		8	11	mΩ
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=20 A, V_{GS}=0V		0.83	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs		50		ns
q_{rr}	Reverse Recovery Charge			110		nC
Dynamic Characteristics [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.4		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= 30V, Frequency=1.0MHz		3400		pF
C_{oss}	Output Capacitance			450		
C_{rss}	Reverse Transfer Capacitance			170		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=35V, R_L=35Ω, I_{DS}= 1A, V_{GEN}= 10V, R_G=7Ω		22	40	ns
t_r	Turn-on Rise Time			11	20	
$t_{d(OFF)}$	Turn-off Delay Time			70	130	
t_f	Turn-off Fall Time			62	120	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=60V, V_{GS}= 10V, I_{DS}=80A		75	110	nC
Q_{gs}	Gate-Source Charge			18		
Q_{gd}	Gate-Drain Charge			25		

Notes: a 、 Pulse test ;Pulse width≤300μs, duty cycle≤2%.
b 、 Guaranteed by design, not subject to production testing.

Typical Characteristics

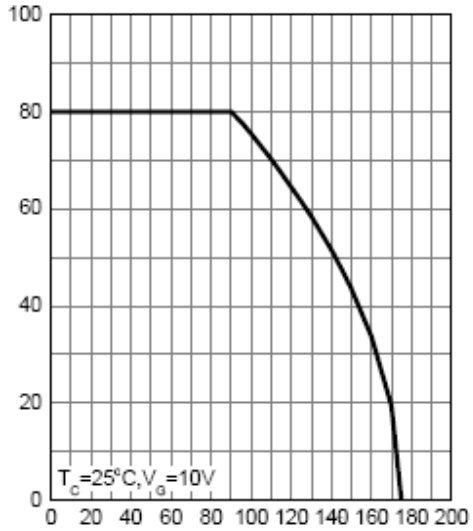
Power Dissipation



P_{tot} - Power (W)

T_j - Junction Temperature (˚C)

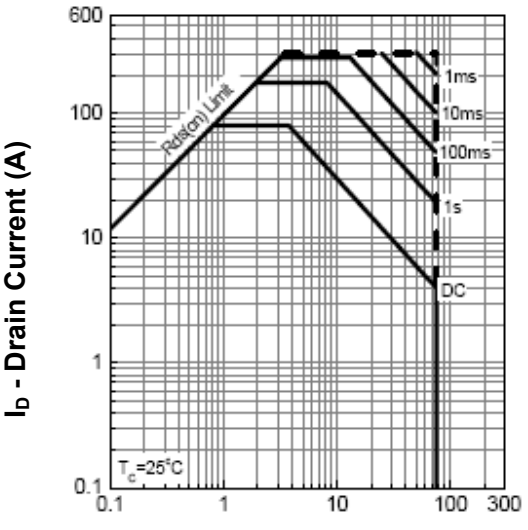
Drain Current



I_D - Drain Current (A)

T_j - Junction Temperature (˚C)

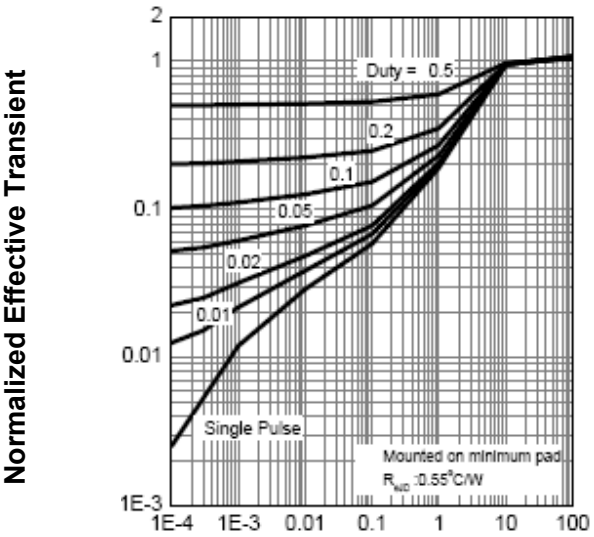
Safe Operation Area



I_D - Drain Current (A)

V_{DS} - Drain-Source Voltage (V)

Thermal Transient Impedance

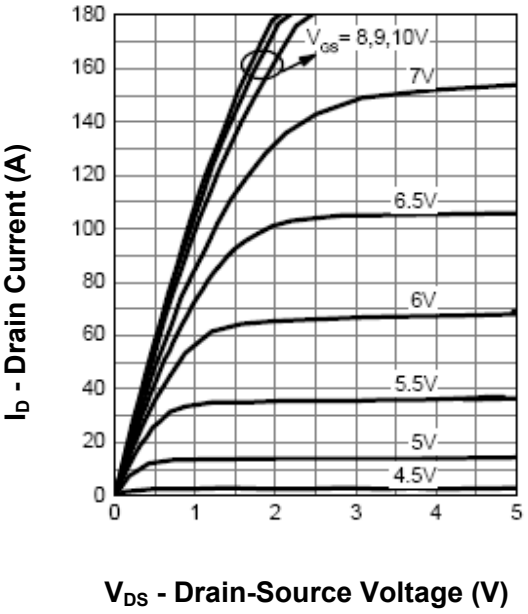


Normalized Effective Transient

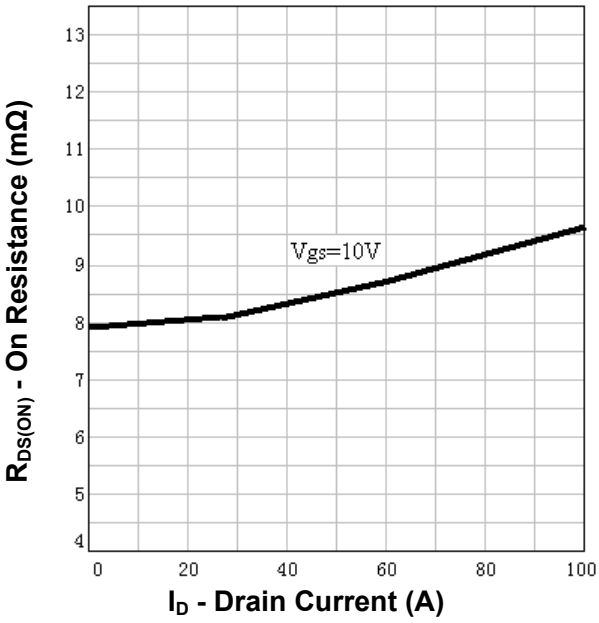
Square Wave Pulse Duration (sec)

Typical Characteristics

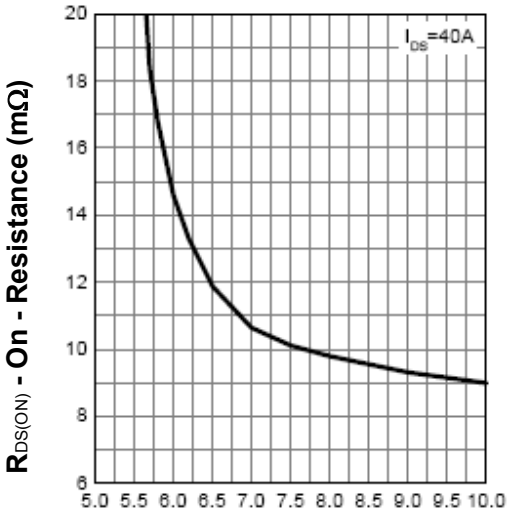
Output Characteristics



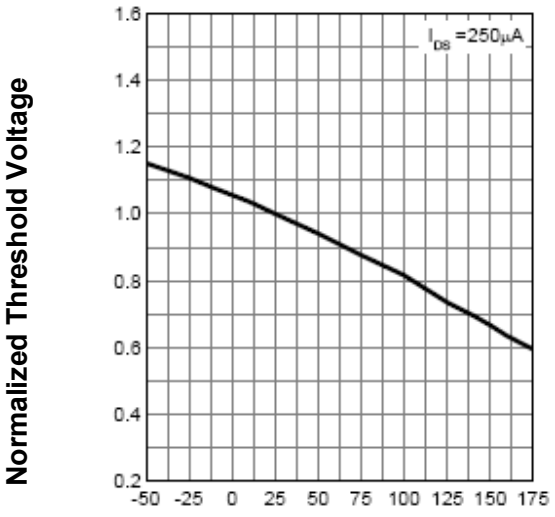
Drain-Source On Resistance



Drain-Source On Resistance

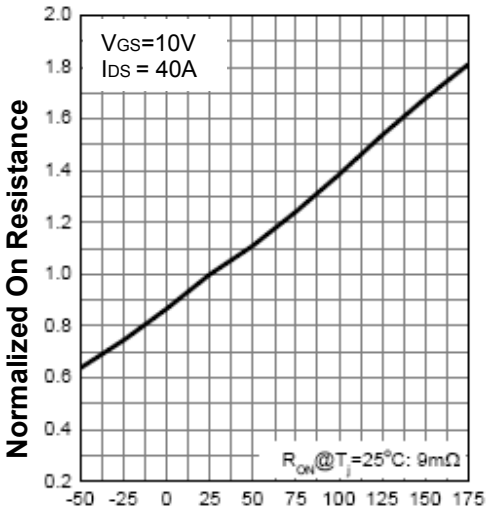


Gate Threshold Voltage



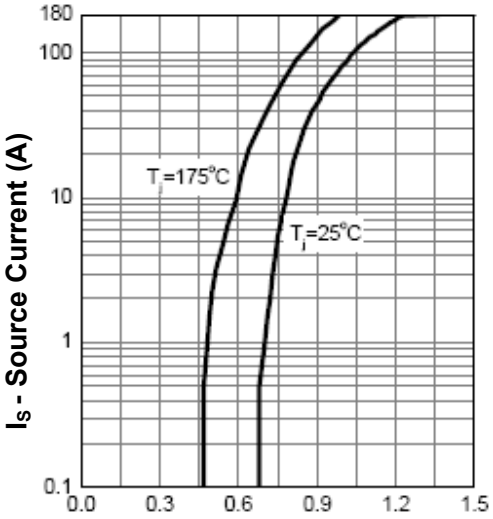
Typical Characteristics

Drain-Source On Resistance



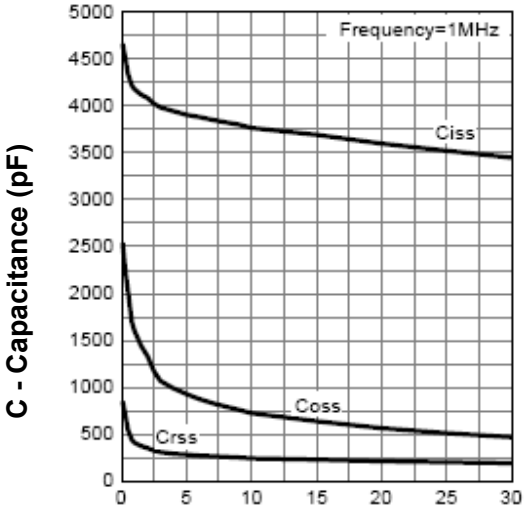
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



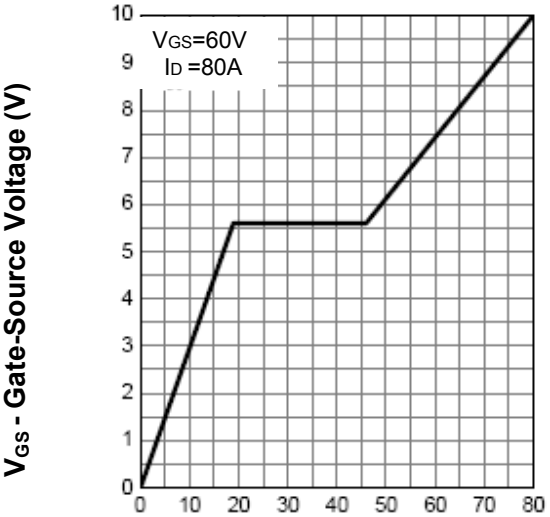
V_{SD} - Source-Drain Voltage (V)

Capacitance



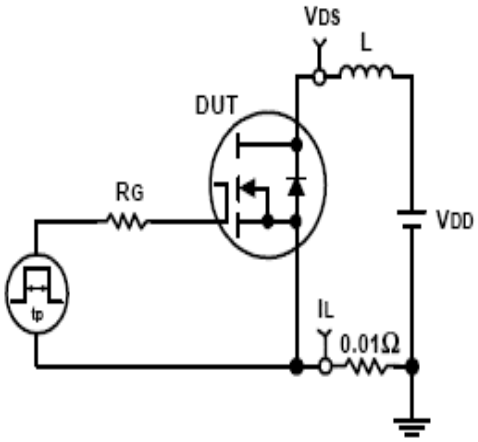
V_{DS} - Drain-Source Voltage (V)

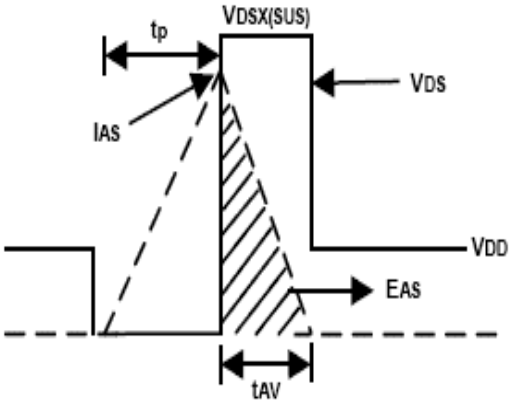
Gate Charge



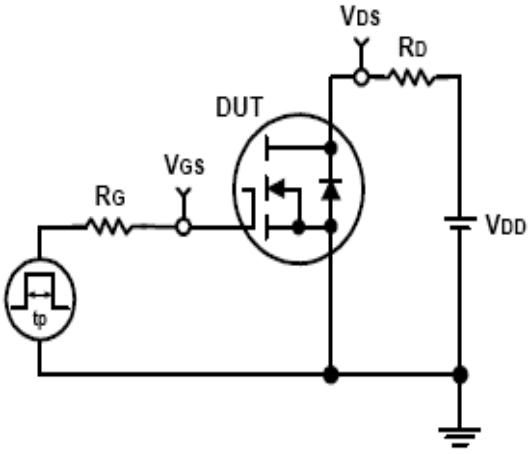
Q_G - Gate Charge (nC)

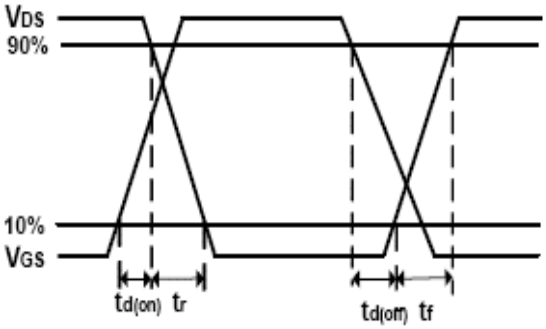
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





Ordering and Marking Information

RU75N08

Package (Available)

R : TO-220; S: TO-263 ; P: TO-220F Q:TO-247

Operating Temperature Range

C : -55 to 175 ºC

Assembly Material

G : Green & Lead Free

Packaging

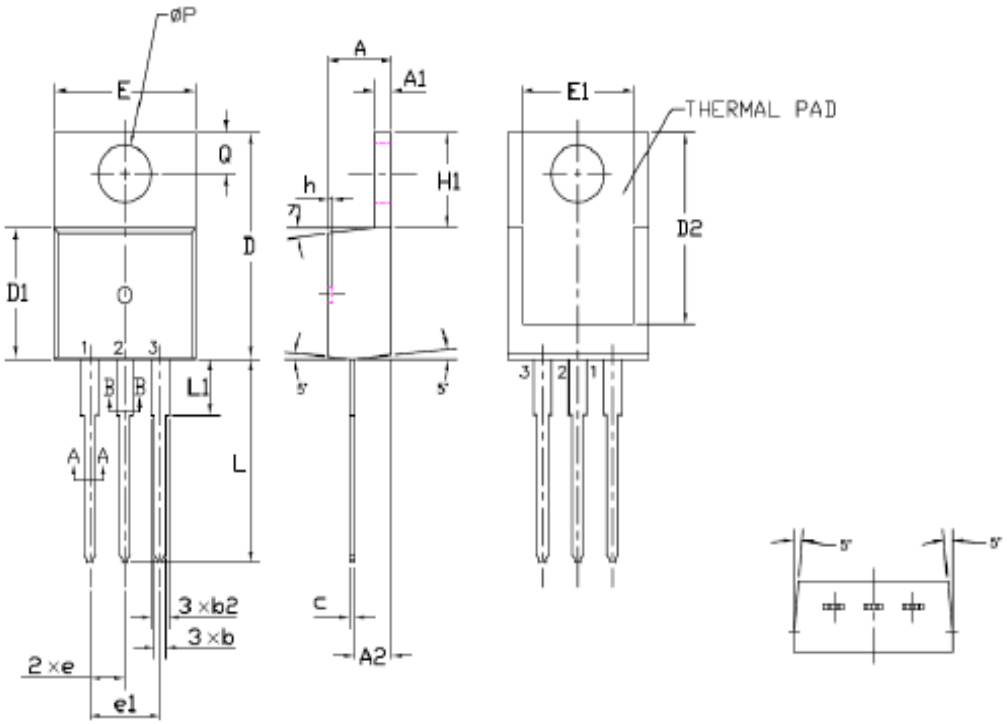
T : TUBE

TR : Tape & Reel

RU	XX	N	XX	X	X	X	X
Company	BVDS	Polarity	ID	Package	Temperature	Green	Packaging

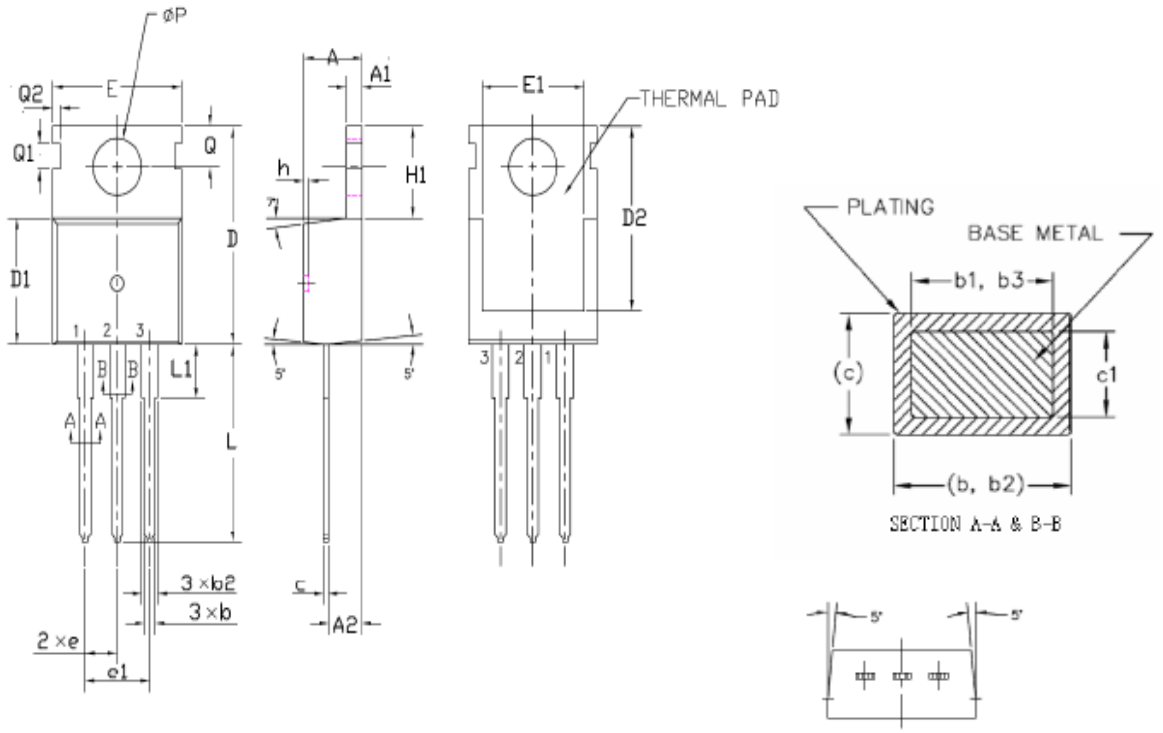
Package Information

TO-220EW



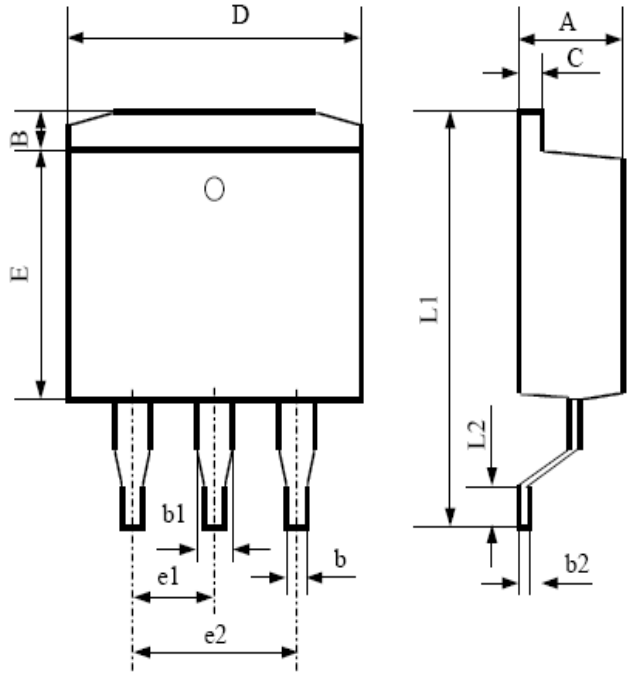
SYMBOL	VARIATION				SYMBOLI	VARIATION			
	MILLIMETERS		INCHES			MILLIMETERS		INCHES	
	MAX.	MIN.	MAX.	MIN.		MAX.	MIN.	MAX.	MIN.
A	4.520	4.320	0.178	0.170	**E**	10.300	10.00	0.406	0.394
A1	1.370	1.170	0.054	0.046	**E1**	8.300	7.700	0.327	0.303
A2	2.750	2.450	0.108	0.096	**e**	2.540REF		0.1REF	
b	0.910	0.710	0.036	0.028	**e1**	5.080REF		0.2REF	
b1	0.890	0.710	0.035	0.028	**H1**	6.420	6.220	0.253	0.245
b2	1.370	1.170	0.054	0.046	**h**	0.3	0	0.012	0
b3	1.350	1.170	0.053	0.046	**L**	13.950	13.150	0.549	0.518
c	0.530	0.350	0.021	0.014	**L1**	3.8000	-	0.150	
c1	0.510	0.350	0.020	0.014	**L2**	-	-	-	-
D	15.340	14.940	0.604	0.588	**Q**	2.840	2.640	0.112	0.104
D1	8.900	8.500	0.350	0.335	**ØP**	3.940	3.740	0.155	0.147
D2	12.600	12.200	0.496	0.480					

TO-220CB



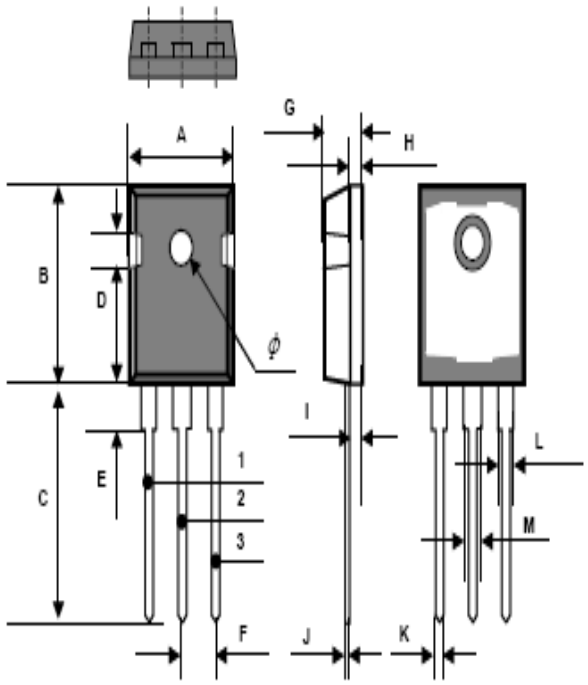
SYMBOL	VARIATION				SYMBOLI	VARIATION			
	MILLIMETERS		INCHES			MILLIMETERS		INCHES	
	MAX.	MIN.	MAX.	MIN.		MAX.	MIN.	MAX.	MIN.
A	4.600	4.400	0.181	0.173	**E**	10.150	9.850	0.400	0.388
A1	1.400	1.200	0.055	0.047	**E1**	8.150	7.850	0.321	0.309
A2	2.530	2.230	0.100	0.088	**e**	2.54REF		0.100REF	
b	0.850	0.750	0.033	0.030	**e1**	5.08REF		0.200REF	
b1	0.870	0.750	0.034	0.030	**H1**	6.550	6.350	0.258	0.250
b2	1.390	1.170	0.055	0.046	**h**	0.300	0	0.012	0
b3	1.370	1.170	0.054	0.046	**L**	13.650	12.700	0.537	0.500
c	0.600	0.400	0.024	0.016	**L1**	3.2	-	0.126	-
c1	0.570	0.400	0.022	0.016	**Q**	2.900	2.700	0.114	0.106
D	15.950	15.500	0.628	0.612	**Q1**	1.820	1.620	0.072	0.064
D1	9.460	8.960	0.372	0.353	**Q3**	0.750	0.550	0.030	0.022
D2	13.600	13.200	0.535	0.520	**ØP**	3.750	3.600	0.148	0.142

TO-263-3L



SYMBOL	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.42	4.72	0.174	0.186
B	1.22	1.32	0.048	0.052
b	0.076	0.086	0.030	0.034
b1	1.22	1.32	0.048	0.052
b2	0.33	0.43	0.013	0.017
C	1.22	1.32	0.048	0.052
D	9.95	10.25	0.392	0.404
E	8.99	9.29	0.354	0.366
e1	2.44	2.64	0.096	0.104
e2	4.98	5.18	0.196	0.204
L1	15.19	15.79	0.598	0.622
L2	1.94	2.19	0.076	0.086

TO-247-3L



Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.77		16.03	0.621		0.631
B	20.77		21.07	0.818		0.830
C	20.05		20.31	0.789		0.800
D	4.40		4.50	0.173		0.177
E	4.22		4.32	0.166		0.170
F	5.32		5.58	0.209		0.220
G	4.90		5.10	0.193		0.200
H	1.92		2.08	0.076		0.082
I	2.33		2.43	0.092		0.096
J		0.6			0.024	
K	1.15		1.25	0.045		0.049
L	1.95		2.05	0.077		0.081
M						

Devices per Unit

Package Type	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TO-220-3L	50	20	1000	10	10000

Customer Service

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