

N-CHANNEL POWER MOSFET MEM2N60

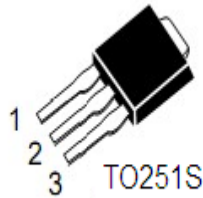
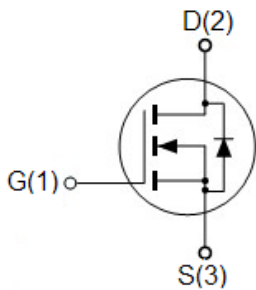
General Description

- Switching regulator application.
- High voltage and high speed.
- Switching application.

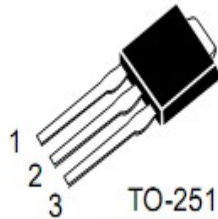
Features

- 600V, 2A
- $R_{DS(ON)}=3.8\Omega@V_{GS}=10V$
- LOW CR_{SS}
- FAST SWITCHING
- PACKAGE :TO251,TO251S,TO252,TO-220F

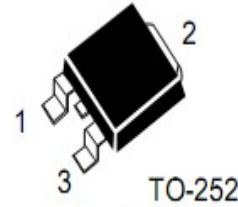
Pin Configuration



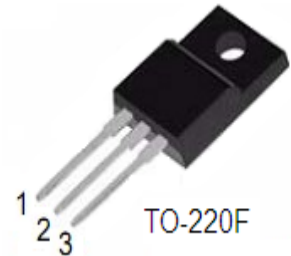
MEM2N60THDG



MEM2N60THG



MEM2N60K3G



MEM2N60A3G

Maximum Ratings($T_A=25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	600V	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	I_D	$T_A=25^\circ\text{C}$	2
		$T_A=100^\circ\text{C}$	1.2
Pulsed Drain Current ^{1,2}	I_{DM}	8	A
Total Power Dissipation	P_d	41	W
Operating Temperature Range	T_{Opr}	-55-150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55-150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	TYP.	MAX.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	3	$^\circ\text{C/W}$

Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	600	650	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=30V$	-	0.8	100	nA
		$V_{DS}=0V, V_{GS}=-30V$	-	-4	-100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$	-	0.8	20	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	3.8	4.5	Ω
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=1A$	-	2	10	S
Drain-Source Diode Forward Continuous Current	I_S	$V_{GS}=0V$	-	-	2	A
Source-drain (diode forward) voltage	V_{SD}	$V_{GS}=0V, I_S=2A$		0.85	1.4	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1MHz$	-	347	-	pF
Output Capacitance	C_{oss}		-	61	-	
Reverse Transfer Capacitance	C_{rss}		-	16	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V,$ $R_G=10\Omega,$ $V_{GS}=10V,$ $I_D=2A$	-	19.4	-	ns
Rise Time	t_r		-	7.74	-	
Turn-Off Delay Time	$t_{d(off)}$		-	28.7	-	
Fall-Time	t_f		-	9.3	-	
Total Gate Charge	Q_g	$V_{DS}=300V,$ $V_{GS}=10V,$ $I_D=2A$		7.84	-	nC
Gate-Source Charge	Q_{gs}		-	1.91	-	
Gate-Drain Charge	Q_{gd}		-	3	-	

- 1、Repetitive rating, pulse width limited by junction temperature.
- 2、Pulse width <300us , duty cycle <2%.
- 3、 $I_{SD}=2.0A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^\circ C$.
- 4、 $L=2.2mH, V_{DD}=50V, I_D=2.0A, R_G=25\Omega, Starting T_J=25^\circ C$.

Typical performance characteristics

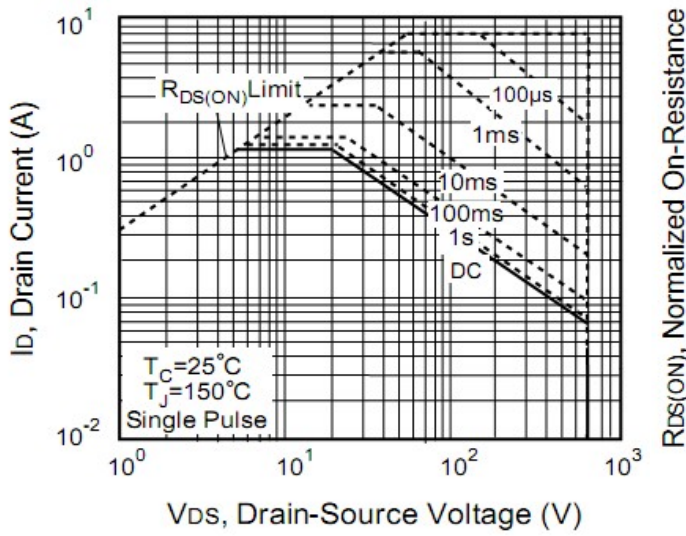


Figure 1 Maximum Safe Operating Area

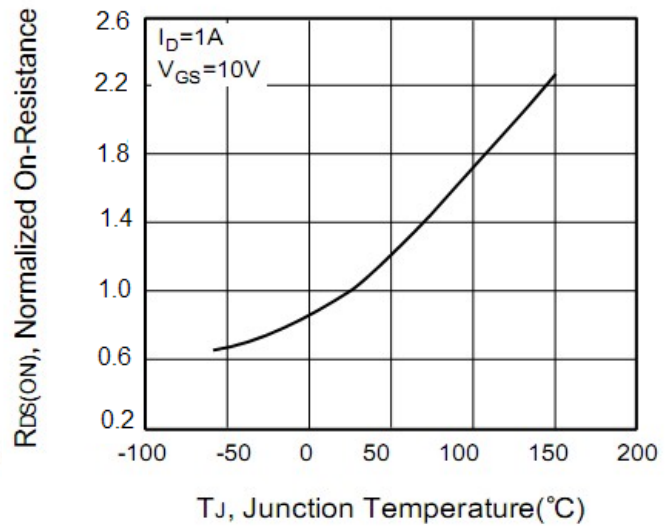


Figure 2. Normalized On-Resistance Variation with Temperature

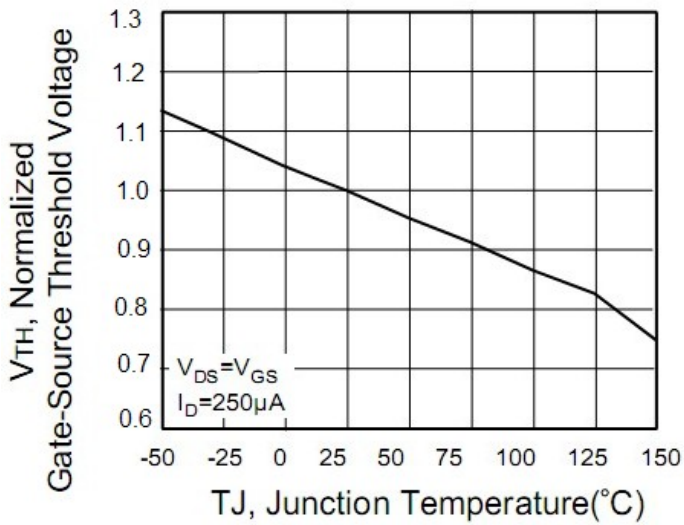


Figure 3. Gate Threshold Variation with Temperature

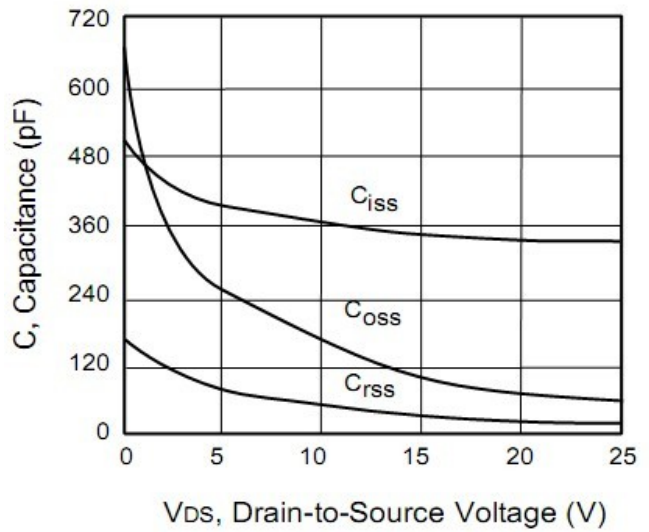


Figure 4. Capacitance Characteristics

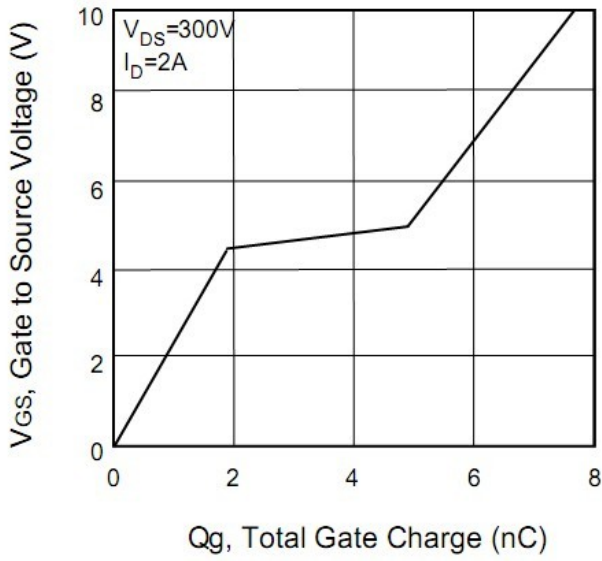


Figure 5. Gate Charge Characteristics

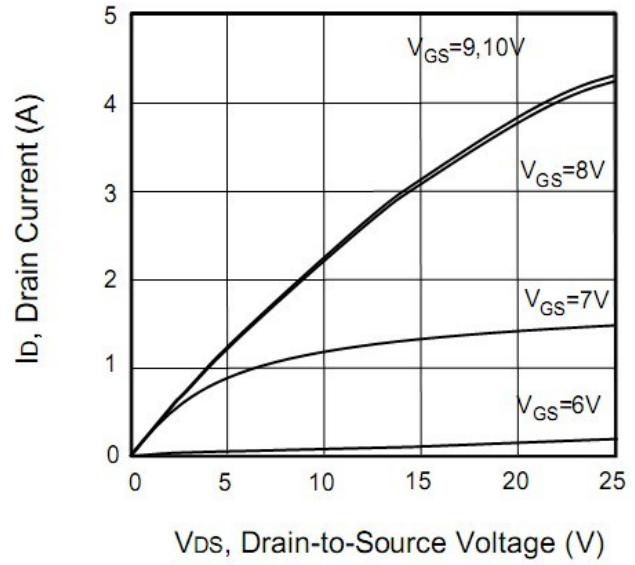


Figure 6. On-State Characteristics

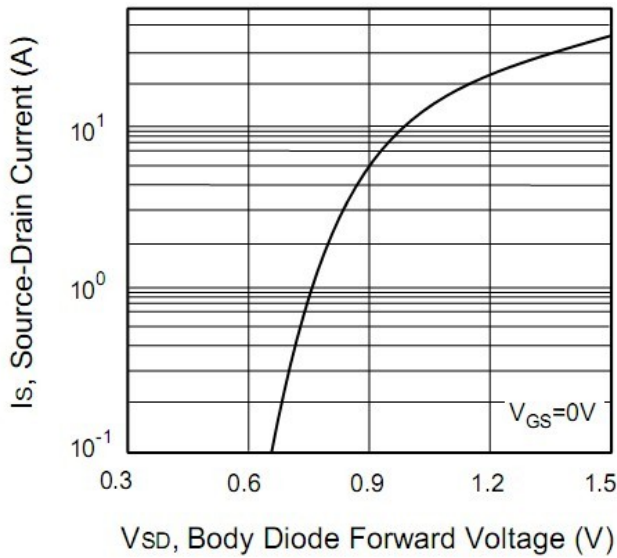


Figure 7. Body Diode Forward Voltage Variation with Source Current

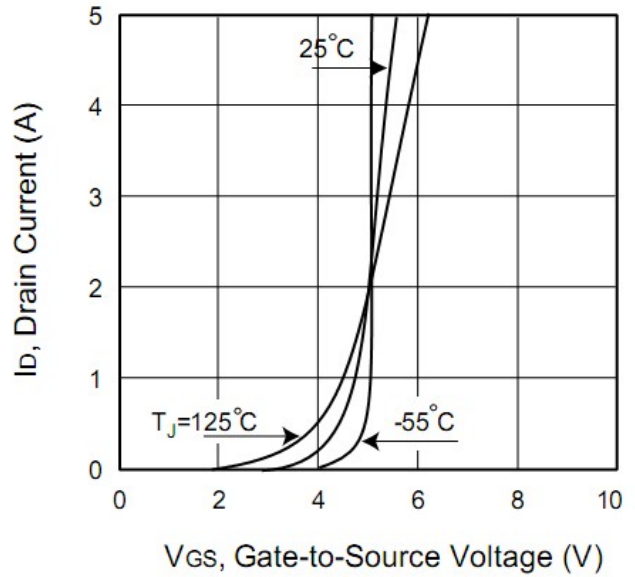


Figure 8. Transfer Characteristics

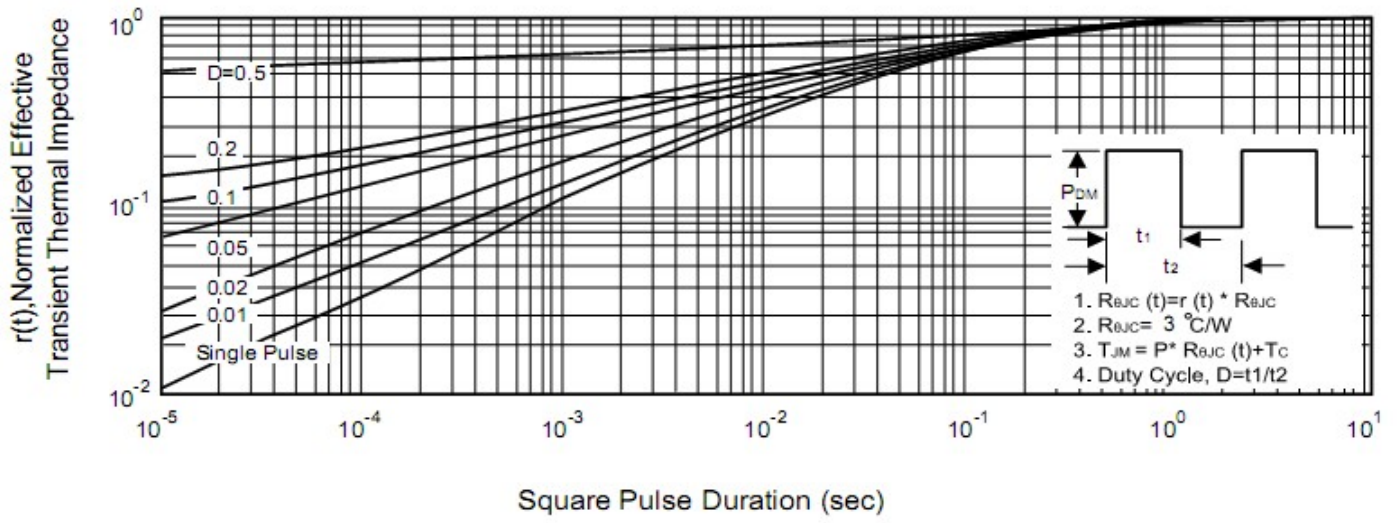
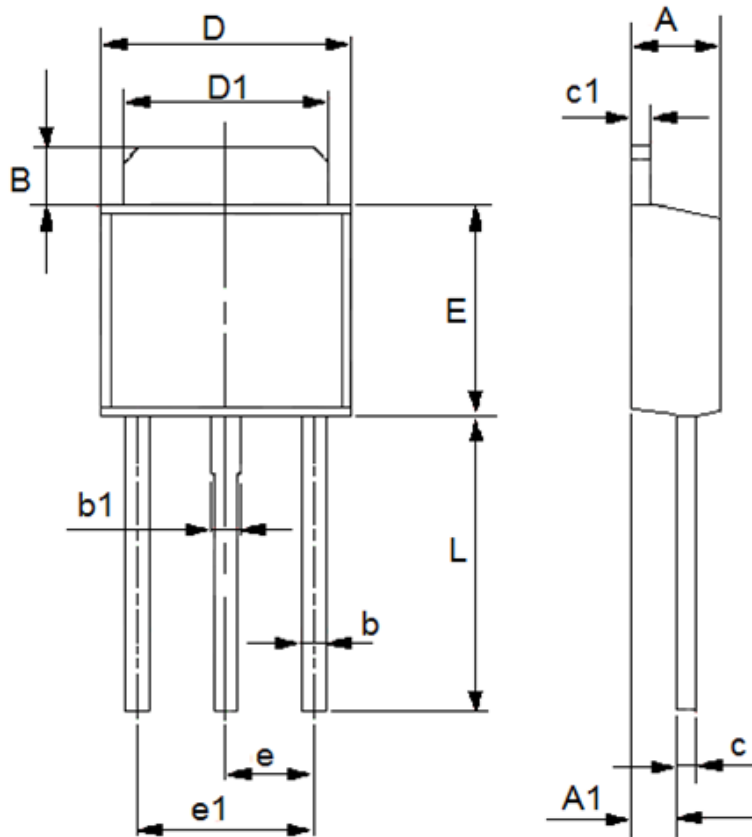


Figure 9 Normalized Effective Transient Thermal Impedance With Pulse Duration

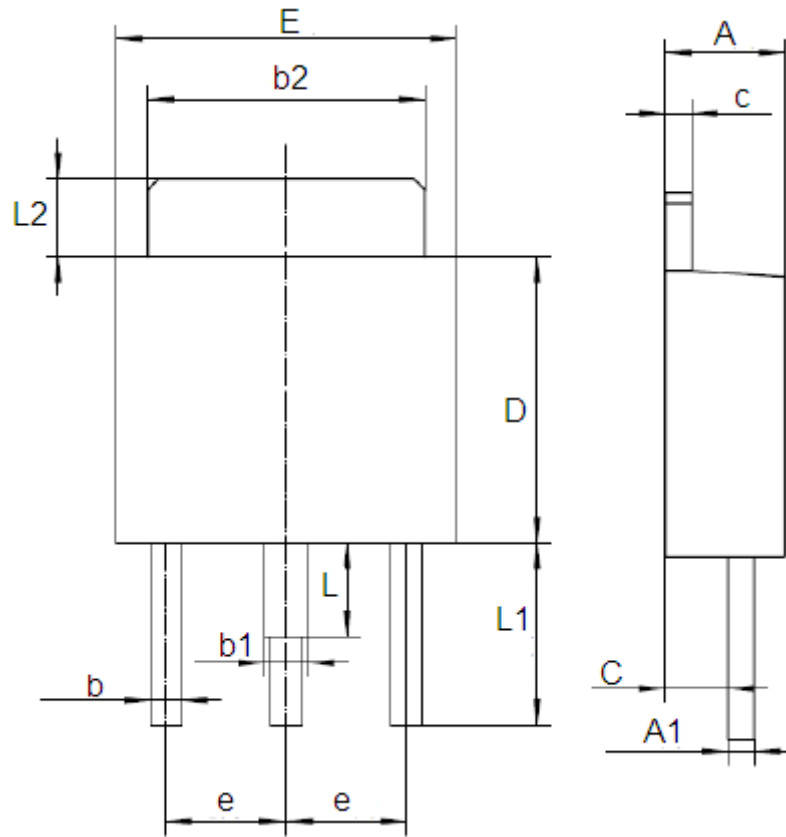
Package Information

- Package Type: TO-251 (A)



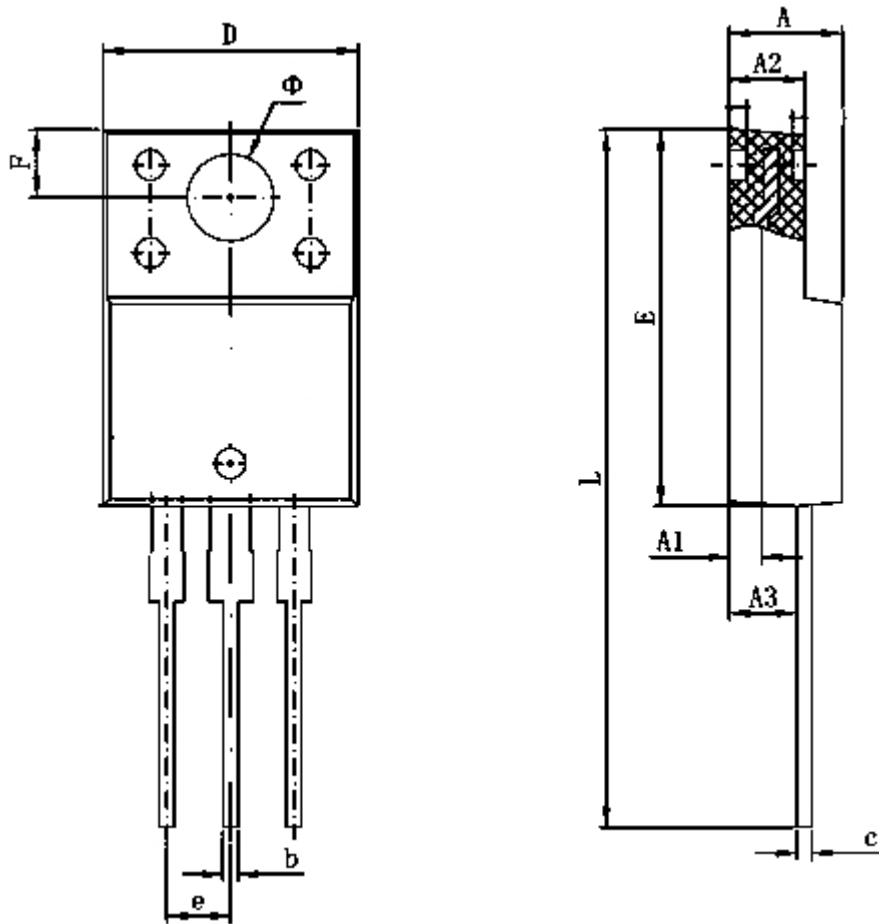
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.2	2.47	0.0866	0.0972
A1	1.05	1.35	0.0413	0.0531
B	1.35	1.65	0.0531	0.065
b	0.5	0.75	0.0197	0.0295
b1	0.7	0.95	0.0276	0.0374
D	6.35	6.68	0.25	0.263
D1	5.2	5.4	0.2047	0.2126
E	5.35	5.75	0.2106	0.2263
e	2.3(TYP)		0.0906(TYP)	
e1	4.6(TYP)		0.1811(TYP)	
L	7.5	8.25	0.2953	0.3248
c	0.5(TYP)		0.0197(TYP)	
c1	0.5(TYP)		0.0197(TYP)	

● Package Type: TO-251 (S)



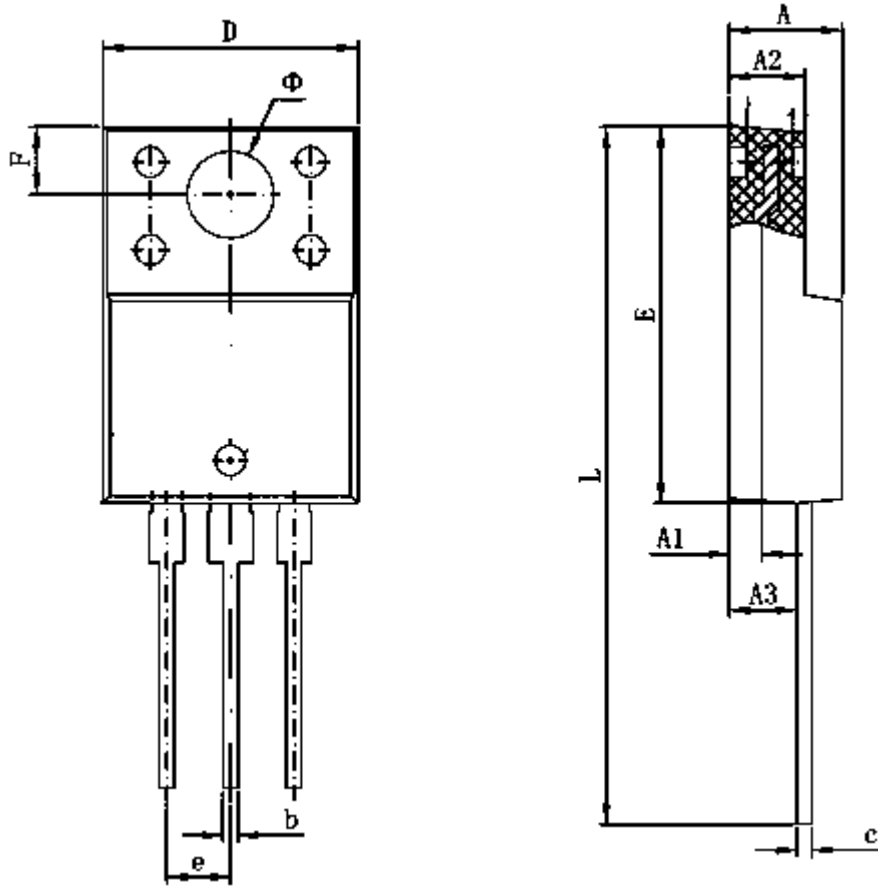
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.3 REF		0.0905 REF	
A1	1.2 REF		0.047 REF	
b	0.6 REF		0.0236 REF	
b1	0.65	0.95	0.0256	0.0374
b2	5.3 REF		0.2087 REF	
c	0.51 REF		0.0201 REF	
D	5.5 REF		0.2165 REF	
E	6.5 REF		0.2559 REF	
e	2.3 REF		0.0905 REF	
L	1.7 REF		0.0669 REF	
L1	3.2	3.7	0.126	0.1457
L2	1.35	1.65	0.053	0.65

● Package Type: TO-220F (A)



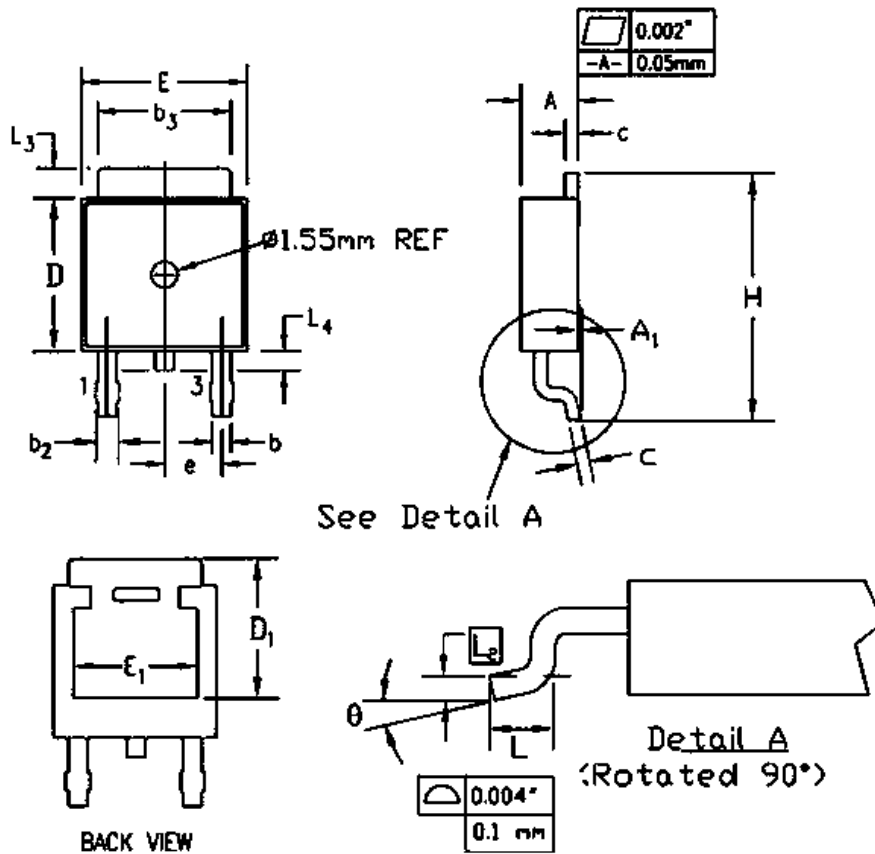
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	4.5	4.9	0.1771	0.1929
A1	0.75	1.05	0.0295	0.0413
A2	2.35	2.75	0.0925	0.1083
A3	2.65	2.85	0.1043	0.1122
b	0.75	0.85	0.0295	0.0334
c	0.45	0.6	0.0177	0.0236
D	10	10.32	0.3937	0.4063
E	15.65	16.05	0.6161	0.6319
e	2.54REF		0.100REF	
F	3.2	3.4	0.1260	0.1338
Φ	3.08	3.28	0.1212	0.1291
L	28.45	29.25	1.1201	1.1516

● Package Type: TO-220F (B)



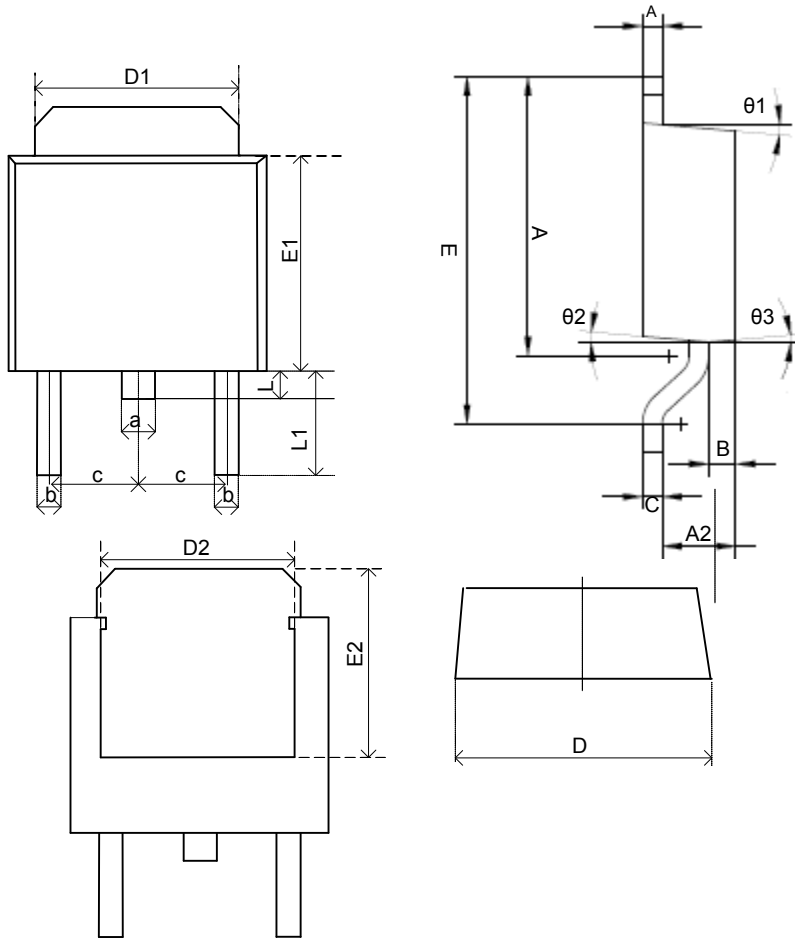
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	4.5	4.9	0.1771	0.1929
A1	0.75	1.05	0.0295	0.0413
A2	2.35	2.75	0.0925	0.1083
A3	2.65	2.9	0.1043	0.1142
b	0.75	0.85	0.0295	0.0334
c	0.45	0.6	0.0177	0.0236
D	10	10.32	0.3937	0.4063
E	15.65	16.15	0.6161	0.6358
e	2.54REF		0.100REF	
F	3.2	3.4	0.1260	0.1338
Φ	3.08	3.28	0.1212	0.1291
L	26.2	29.8	1.0315	1.1732

● Package Type:TO-252(A)



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.19	2.38	0.086	0.094
A1	-	0.13	-	0.005
b	0.64	0.89	0.025	0.035
b2	0.84	1.14	0.033	0.045
b3	5.21	5.46	0.205	0.215
c	0.46	0.61	0.018	0.024
D	5.97	6.22	0.235	0.250
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.7	4.9	0.185	0.1929
e	2.2	2.4	0.0866	0.0945
H	9.65	10.41	0.380	0.410
L	1.40	1.78	0.055	0.070
L2	0.51REF		0.020REF	
L3	0.89	1.27	0.035	0.050
L4	0.6	1.01	0.0236	0.040
θ	0°	8°	0°	8°

● Package Type: TO-252 (B)



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	7.0	7.4	0.2756	0.2913
B	0.6	0.8	0.0236	0.0315
C	0.5REF		0.0197REF	
D	6.5	6.7	0.2559	0.2638
D1	5.3REF		0.2087REF	
D2	4.6	4.8	0.1811	0.189
E	8.8	9.2	0.3464	0.3622
E1	5.4	5.8	0.2126	0.2283
E2	4.78	4.98	0.1882	0.1961
L	0.35	0.95	0.0138	0.0374
L1	2.35	2.95	0.0925	0.1161
a	0.85REF		0.0335REF	
b	0.6	0.8	0.0236	0.0315
c	2.3REF		0.0905REF	
θ1 θ2	5°REF		0.1968°REF	
θ3	0.5° REF		0.0197° REF	

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