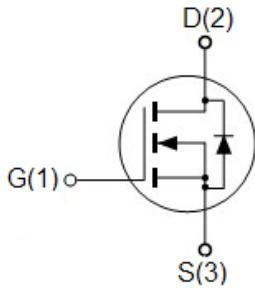


N-CHANNEL POWER MOSFET MEM1N60

General Description

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

Pin Configuration



Features

- 600V, 1A
- $R_{DS(ON)}=9.3\Omega@V_{GS}=10V$
- LOW CRSS
- FAST SWITCHING
- PACKAGE : TO251, TO126, TO92



TO251



TO126



TO92

MEM1N60THG

MEM1N60TZG

MEM1N60TG

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	$T_A=25^\circ\text{C}$	1
		$T_A=100^\circ\text{C}$	0.6
Pulsed Drain Current ^{1,2}	I_{DM}	4	A
Total Power Dissipation	P_d	36	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	$R_{\theta JC}$	3.0	3.5	$^\circ\text{C/W}$

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	3.15	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	7.2	9.3	Ω
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=1A$	-	0.9	10	S
Drain-Source Diode Forward Continuous Current	I_S	$V_{GS}=0V$	-	-	1	A
Source-drain (diode forward) voltage	V_{SD}	$V_{GS}=0V, I_S=1A$		0.85	1.5	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1MHz$	-	196	-	pF
Output Capacitance	C_{oss}		-	50	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V,$ $R_G=4.7\Omega,$ $V_{GS}=10V,$ $I_D=1A$	-	18	-	ns
Rise Time	t_r		-	7.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	27.5	-	
Fall-Time	t_f		-	20.6	-	
Total Gate Charge	Q_g	$V_{DS}=300V,$ $V_{GS}=10V,$ $I_D=1A$	-	4.4	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	
Gate-Drain Charge	Q_{gd}		-	2	-	

- 1、Repetitive rating, pulse width limited by junction temperature.
- 2、Pulse width <300us , duty cycle <2%.
- 3、 $I_{SD}=1.0A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^\circ C$.
- 4、 $L=9mH, V_{DD}=50V, I_D=1.0A, R_G=25\Omega, Starting T_J=25^\circ C$.

Typical performance characteristics

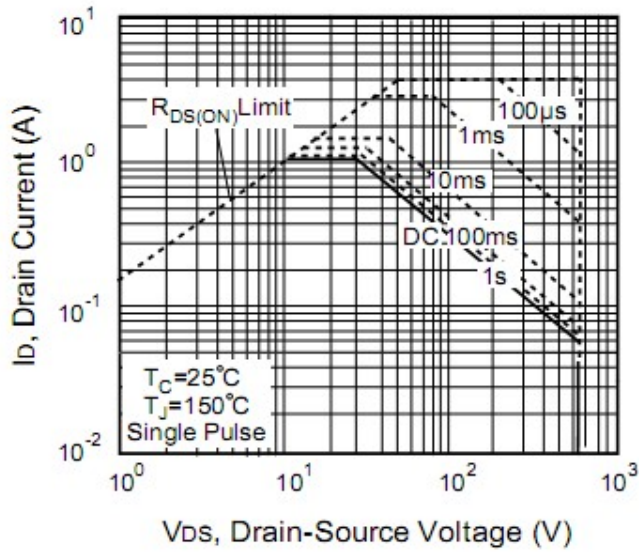


Figure 1. Maximum Safe Operating Area

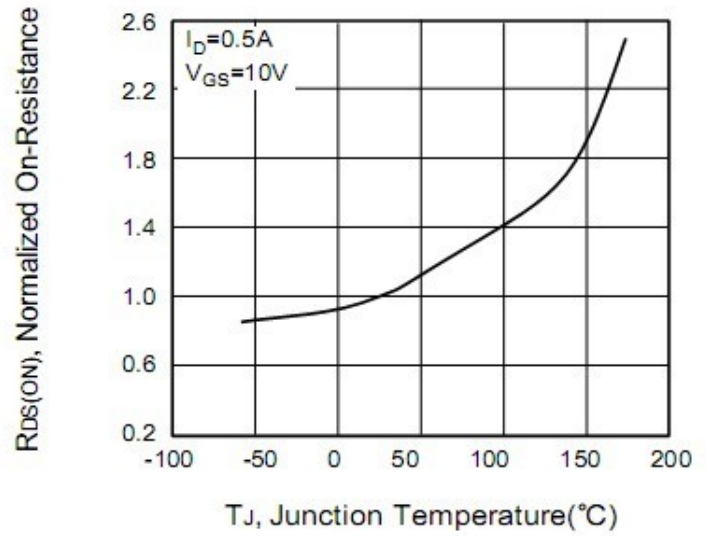


Figure 2. Normalized On-Resistance Variation with Temperature

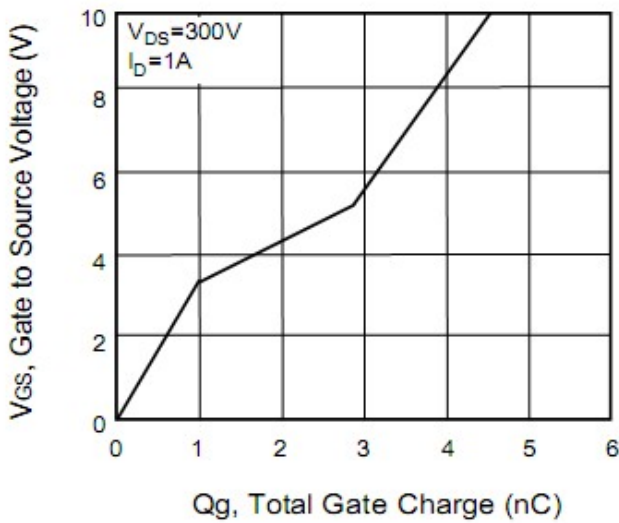


Figure 3. Gate Charge Characteristics

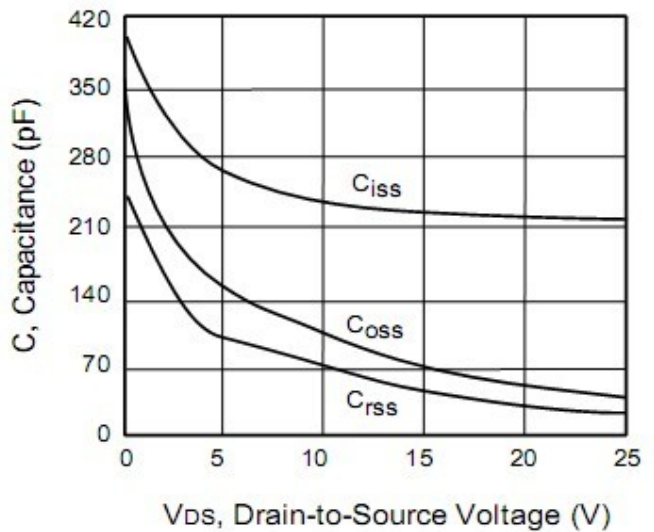


Figure 4. Capacitance Characteristics

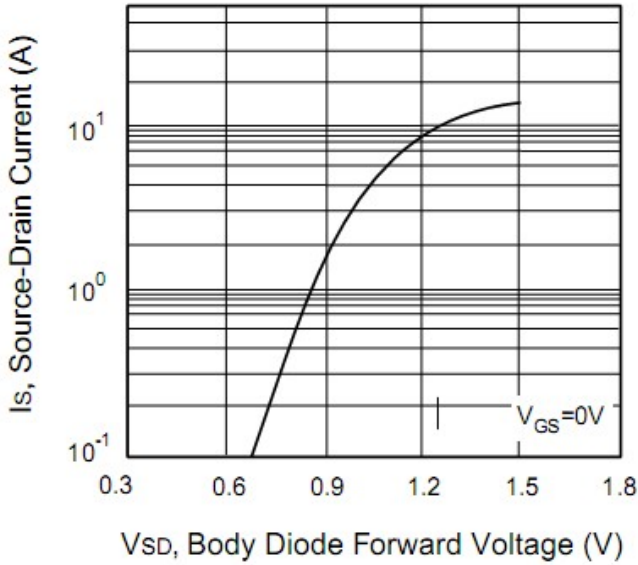


Figure 5. Body Diode Forward Voltage Variation with Source Current

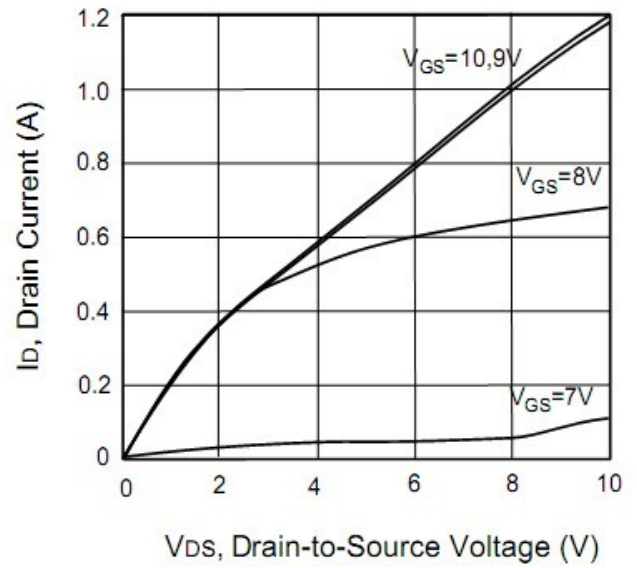


Figure 6. On-State Characteristics

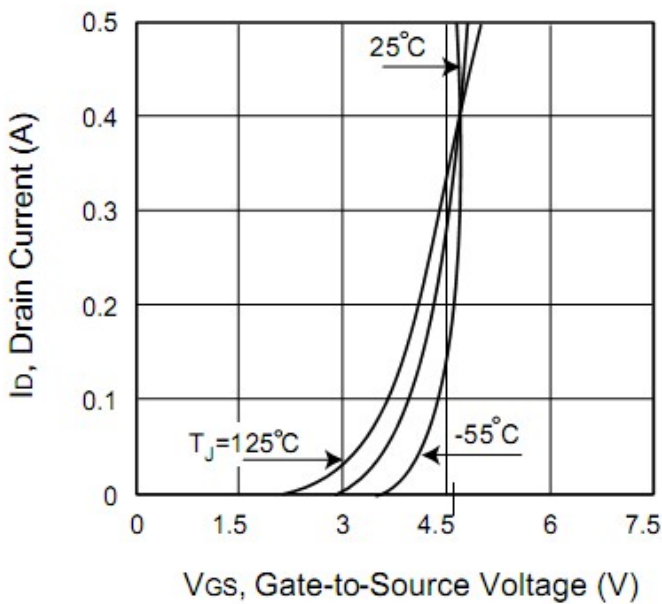


Figure 7. Transfer Characteristics

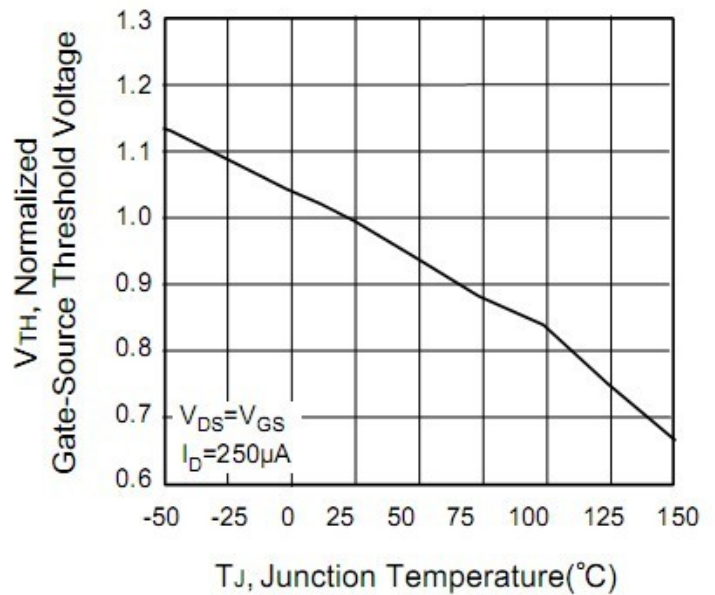


Figure 8. Gate Threshold Variation with Temperature

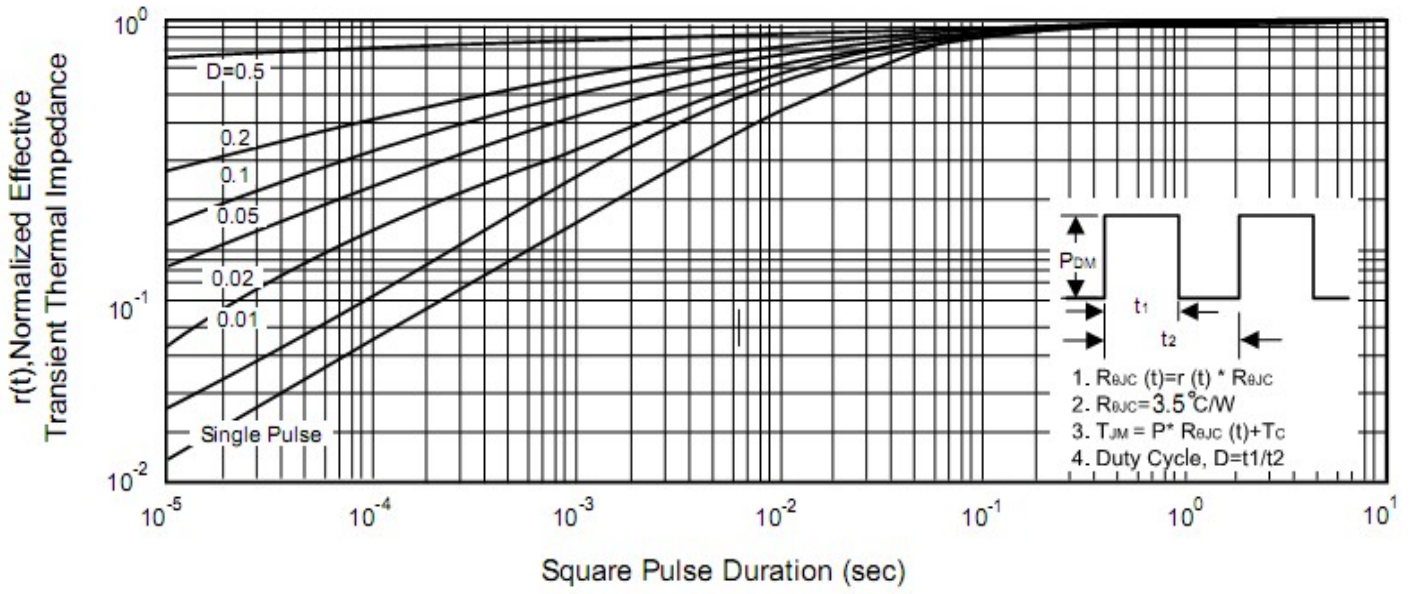
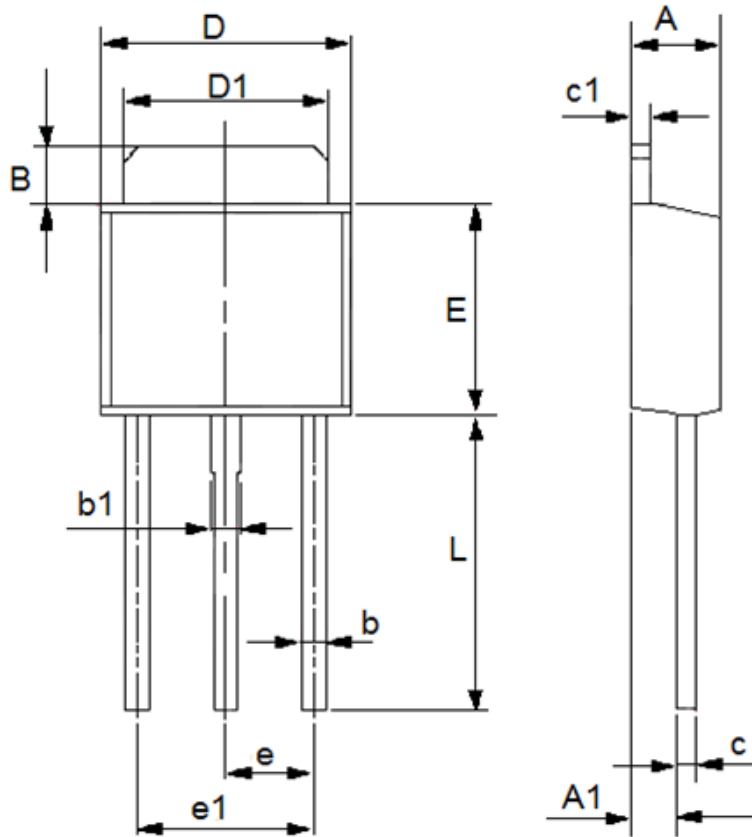


Figure 9. Normalized Effective Transient Thermal Impedance With Pulse Duration

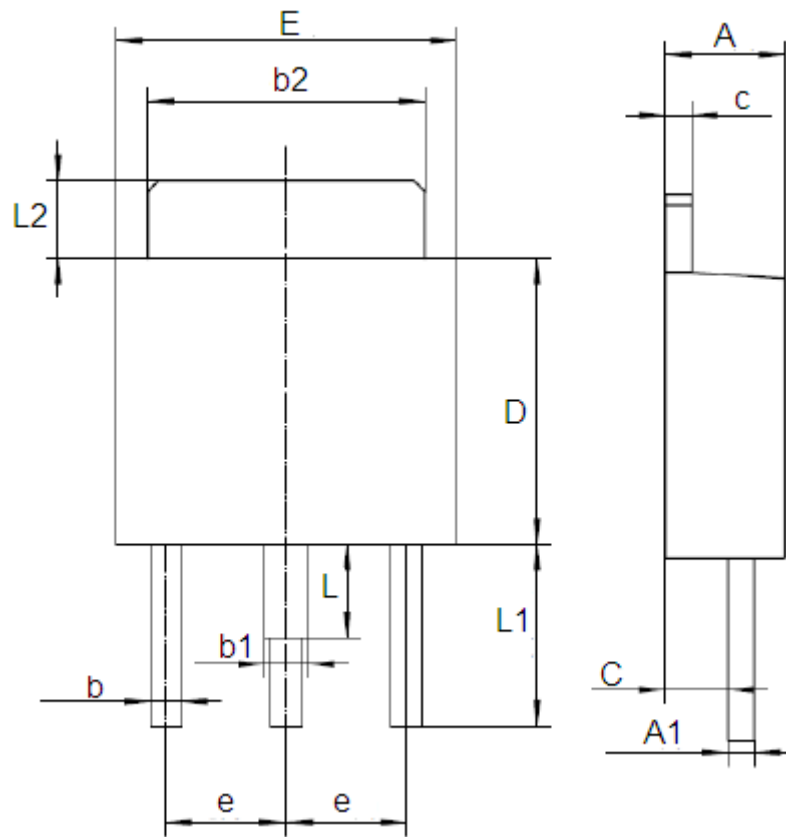
Package Information

- Package Type: TO-251 (A)



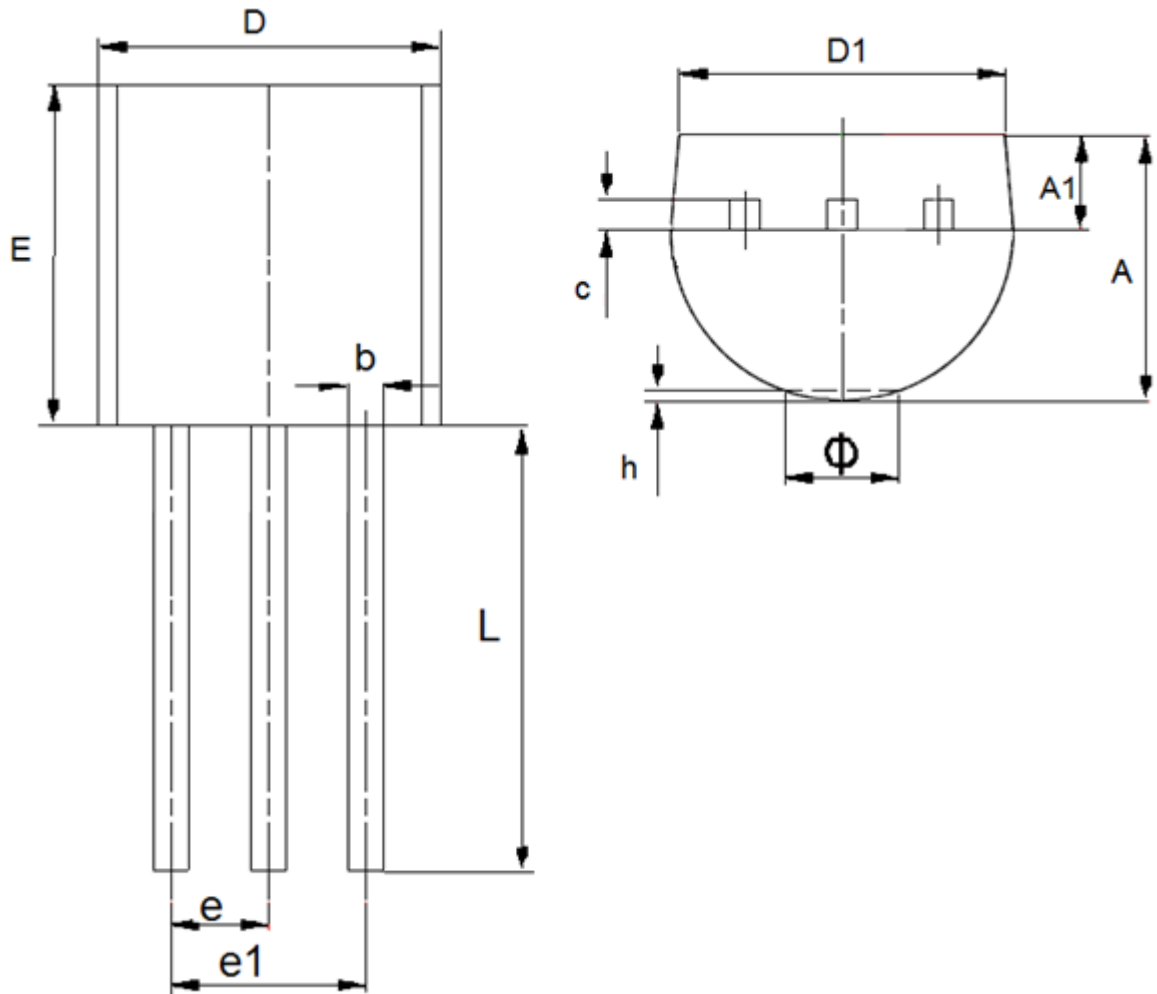
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.2	2.47	0.0866	0.0972
A1	1.05	1.35	0.0413	0.0531
B	1.35	1.65	0.0531	0.065
b	0.5	0.75	0.0197	0.0295
b1	0.7	0.95	0.0276	0.0374
D	6.35	6.68	0.25	0.263
D1	5.2	5.4	0.2047	0.2126
E	5.35	5.75	0.2106	0.2263
e	2.3(TYP)		0.0906(TYP)	
e1	4.6(TYP)		0.1811(TYP)	
L	7.5	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-92



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	3.3	3.7	0.1299	0.1457
A1	1.1	1.4	0.0433	0.0551
b	0.38	0.55	0.015	0.0217
c	0.36	0.51	0.0142	0.0201
D	4.3	4.7	0.1693	0.185
D1	3.43	—	0.135	—
E	4.3	4.7	0.1693	0.185
e	1.27		0.05	
e1	2.44	2.64	0.0961	0.1039
L	14.1	14.5	0.5551	0.5709
h	0	0.38	0	0.015
Φ	—	1.6	—	0.063

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