



DESCRIPTION

The AM65R560 is available in TO-220, TO-251 and TO-252 packages.

BVDSS	RDSON	ID
700V	0.5Ω	8A

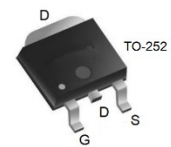
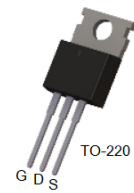
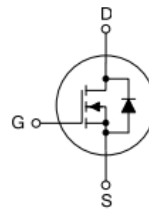
Application:

High frequency switching mode power supply

FEATURE

- Fast Switching
- 100% avalanche tested
- Improved dv/dt capability

PIN DESCRIPTION



ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM65R560T3U
		AM65R560T3VU
TO-251 SPQ: 75 pcs/Tube	TD3	AM65R560TD3U
		AM65R560TD3VU
TO-252 SPQ: 2,500pcs/Reel	D	AM65R560DR
		AM65R560DVR
Note	U: Tube	
	R: Tape & Reel	
	V: Halogen free Package	
AiT provides all RoHS products		

Pin#		Symbol	Function
TO-220 TO-251	TO-252		
1	1	G	Gate
2	2,4	D	Drain
3	3	S	Source

**ABSOLUTE MAXIMUM RATINGS**

T_C = 25°C, unless otherwise specified.

V _{DSS} , Drain-to-Source Voltage		650V
I _D , Continuous Drain Current		8A
I _D , Continuous Drain Current T _C = 100 °C		5A
I _{DM} , Pulsed Drain Current ⁽¹⁾		24A
V _{GS} , Gate-to-Source Voltage		±30V
E _{AS} , Single Pulse Avalanche Energy ⁽²⁾		145mJ
dv/dt, Peak Diode Recovery dv/dt ⁽³⁾		15V/ns
P _D , Power Dissipation	TO-220, TO-251, TO-252	90W
P _D , Derating Factor above 25°C		0.73W/°C
T _J , Operating Junction Temperature Range		150°C
T _{STG} , Storage Temperature Range		-55°C~+150°C
T _L , Maximum Temperature for Soldering		300°C
R _{θJA} , Junction-to-Ambient	TO-220, TO-251, TO-252	62.5°C/W
R _{θJC} , Junction-to-Case		1.39°C/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Pulse width limited by maximum junction temperature

(2) L=20mH, V_{DS}=50V, Start T_J=25°C

(3) I_{SD} =4.8A, di/dt ≤100A/us, V_{DD}≤B_{VDS}, Start T_J=25°C



ELECTRICAL CHARACTERISTICS

T_c = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF Characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	650	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} / ΔT _J	I _D =250μA Reference 25°C	-	0.67	-	V/°C
Drain to Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =520V, V _{GS} =0V, T _J =125°C	-	-	10	
Gate to Source Forward Leakage	I _{GSS(F)}	V _{GS} =+30V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{GS} =-30V	-	-	-100	nA
ON Characteristics						
Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =2.1A ⁽⁴⁾	-	0.5	0.56	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D =250μA ⁽⁴⁾	3.0	-	4.0	V
Dynamic Characteristics						
Gate resistance	R _g	f=1.0MHz	-	8.5	-	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz	-	540	-	pF
Output Capacitance	C _{oss}		-	440	-	
Reverse Transfer Capacitance	C _{rss}		-	15	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =3A, V _{DD} =350V, V _{GS} =10V, R _G =51Ω	-	30.4	-	ns
Rise Time	t _r		-	43.38	-	
Turn-Off Delay Time	t _{d(OFF)}		-	93.6	-	
Fall Time	t _f		-	50.4	-	
Total Gate Charge	Q _g	I _D =4.8A, V _{DD} =520V, V _{GS} =10V	-	16	-	nC
Gate to Source Charge	Q _{gs}		-	4.3	-	
Gate to Drain ("Miller") Charge	Q _{gd}		-	6.3	-	
Source-Drain Diode Characteristics						
Continuous Source Current (Body Diode)	I _S	T _c =25°C	-	-	8	A
Maximum Pulsed Current (Body Diode)	I _{SM}		-	-	24	A
Diode Forward Voltage	V _{SD}	I _S =4.8A , V _{GS} =0V *	-	-	1.2	V
Reverse Recovery Time	T _{rr}	I _S =4.8A, T _J =25°C dIF/dt =100A/μs	-	211.8	-	ns
Reverse Recovery Charge	Q _{rr}		-	1695	-	nC
Reverse Recovery Current	I _{rrm}		-	13.6	-	A

* Pulse width tp≤300μs, δ≤2%



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area (TO-220)

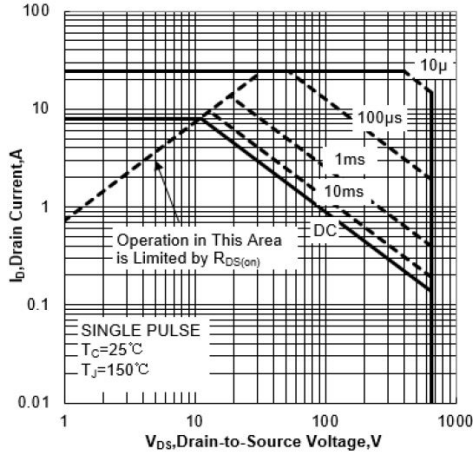


Fig 2. Power Dissipation (TO-220)

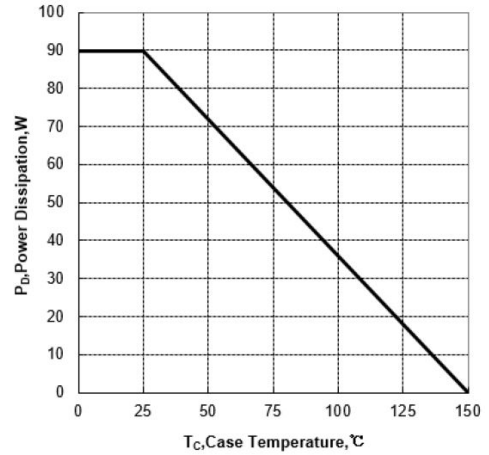


Fig3. Max Thermal Impedance (TO-220)

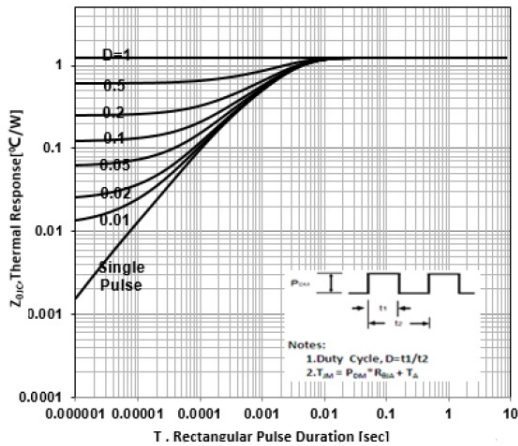


Fig4. Typical Output Characteristics

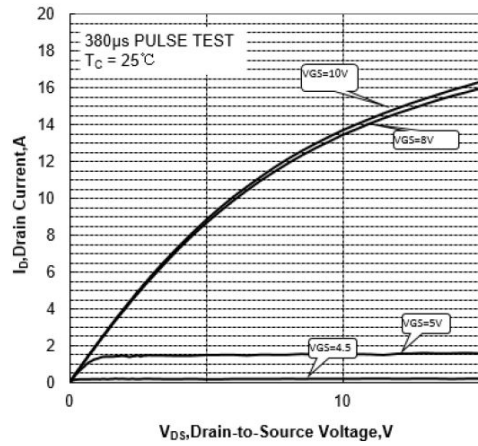


Fig5. Typical Transfer Characteristics

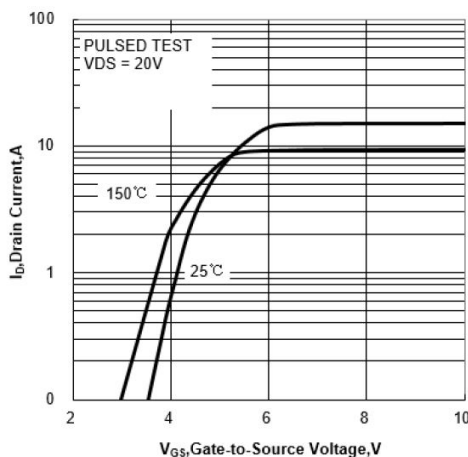


Fig6. Typical Drain to Source ON Resistance vs. Drain Current

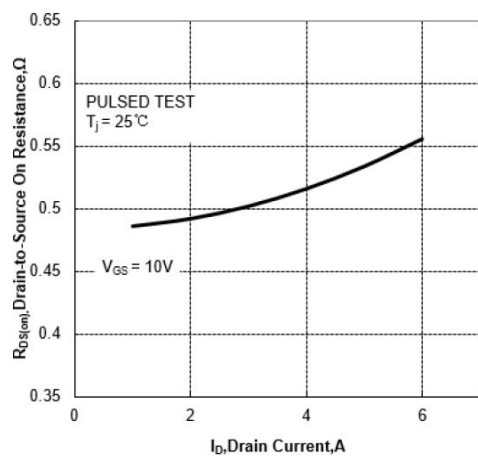




Fig7. Typical Drain to Source on Resistance vs. Junction Temperature

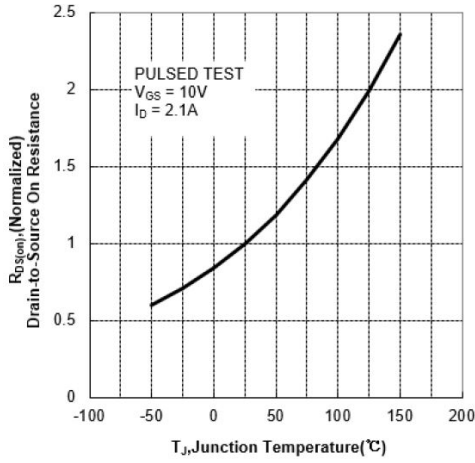


Fig8. Typical Threshold Voltage vs. Junction Temperature

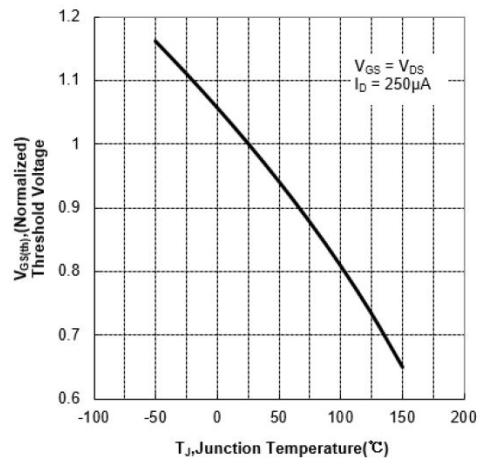


Fig9. Typical Breakdown Voltage vs. Junction Temperature

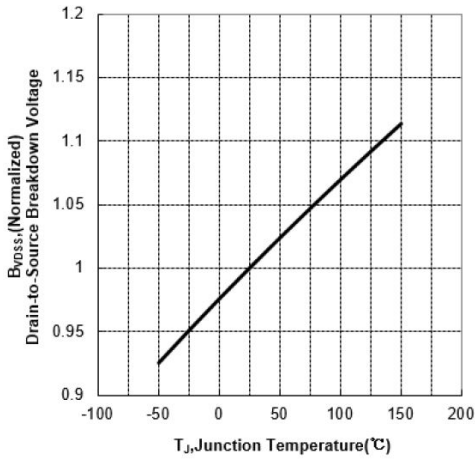


Fig10. Typical Capacitance vs. Drain to Source Voltage

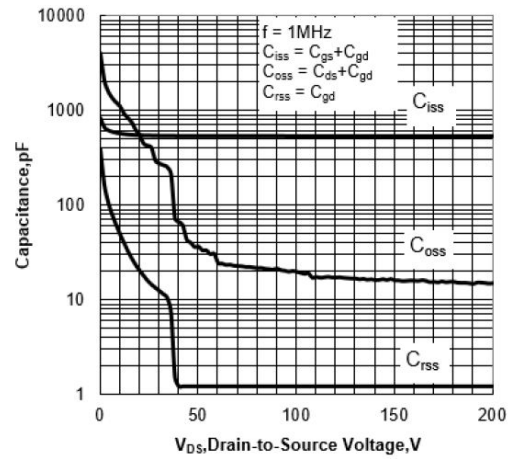


Fig11. Typical Gate Charge vs. Gate to Source Voltage

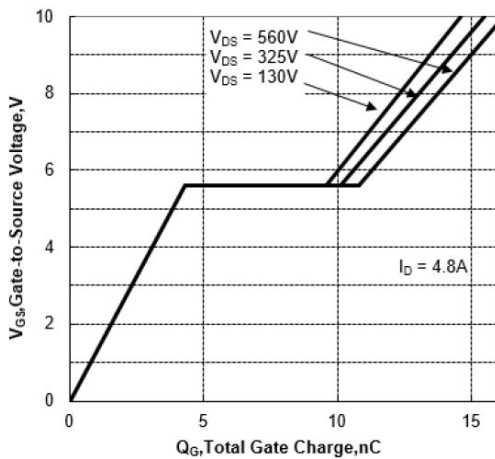


Fig12. Gate Charge Test Circuit

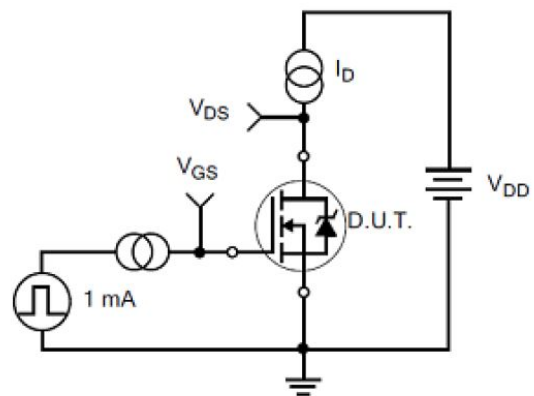




Fig 13. Gate Charge Waveforms

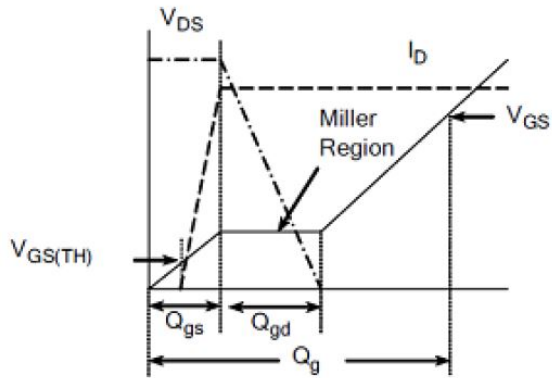


Fig 14. Resistive Switching Test Circuit

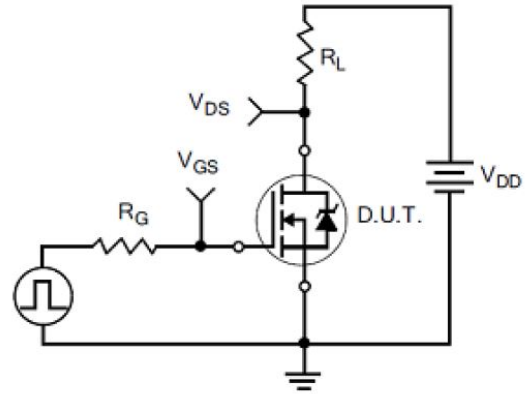


Fig15. Resistive Switching Waveforms

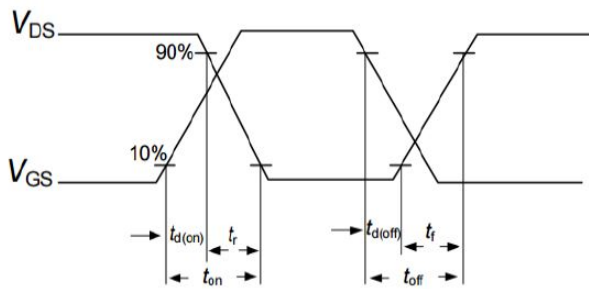


Fig16. Diode Reverse Recovery Test Circuit

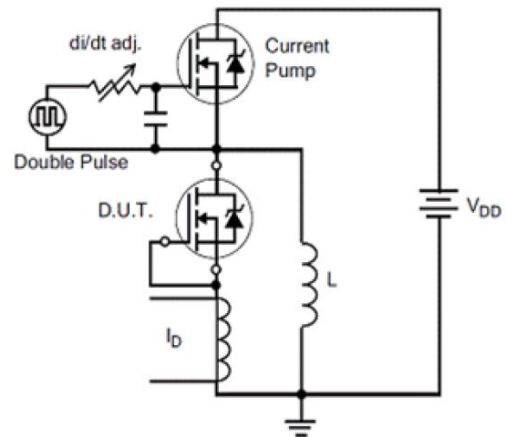


Fig17. Diode Reverse Recovery Waveform

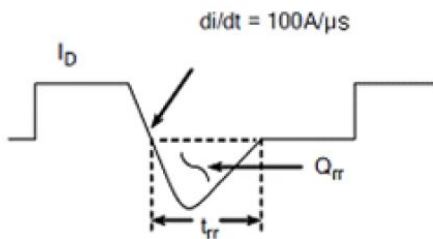


Fig18. Unclamped Inductive Switching Test Circuit

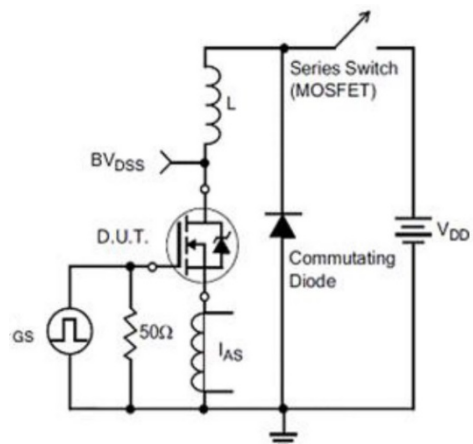
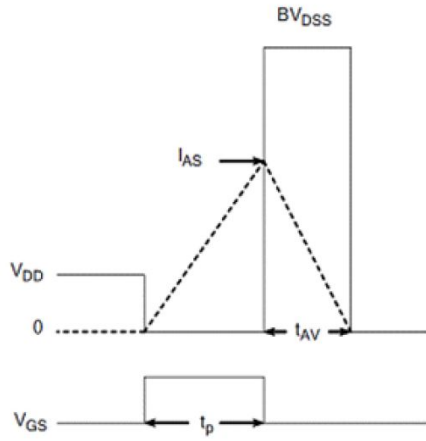




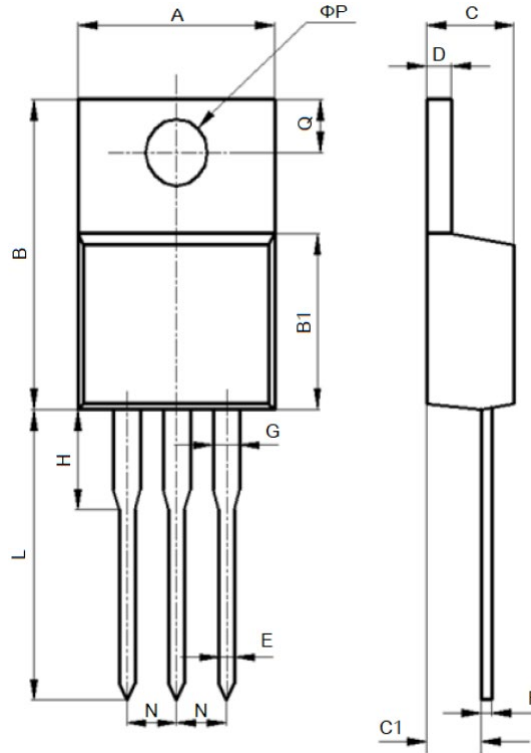
Fig 19. Unclamped Inductive Switching Waveform





PACKAGE INFORMATION

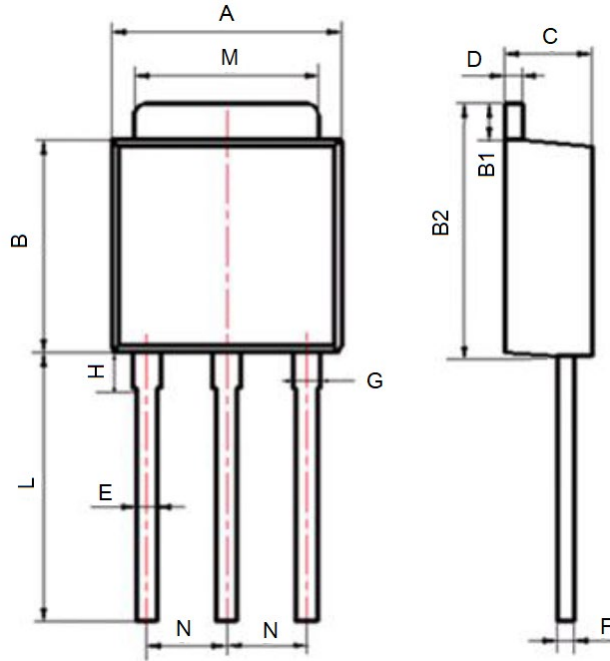
Dimension in TO-220 (Unit: mm)



Symbol	Min.	Max.
A	9.600	10.600
B	15.000	16.000
B1	8.900	9.500
C	4.300	4.800
C1	2.300	3.100
D	1.200	1.400
E	0.700	0.900
F	0.300	0.600
G	1.170	1.370
H	2.700	3.800
L	12.600	14.800
N	2.340	2.740
Q	2.400	3.000
ΦP	3.500	3.900



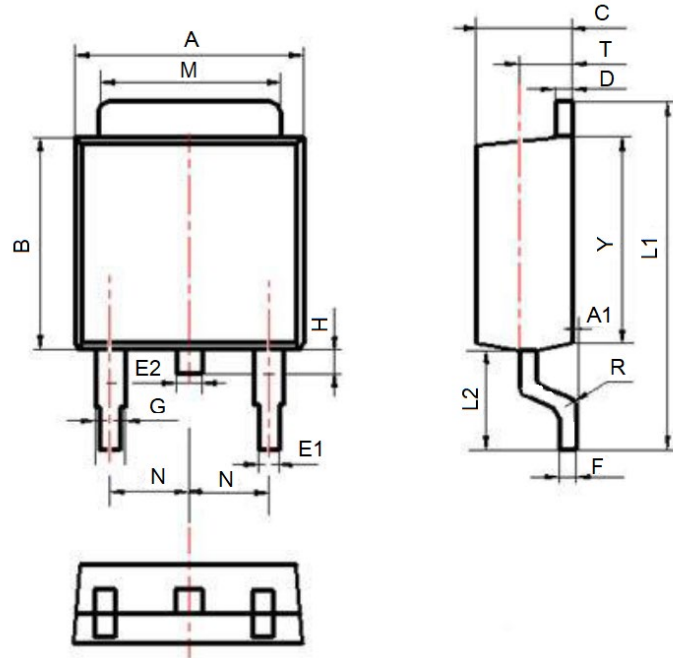
Dimension in TO-251 (Unit: mm)



Symbol	Min.	Max.
A	6.300	6.900
B	5.700	6.300
B1	1.000	1.200
B2	6.800	7.400
C	2.100	2.500
D	0.300	0.600
E	0.500	0.700
F	0.300	0.600
G	0.700	1.000
H	1.600	2.400
L	3.900	4.300
M	5.100	5.500
N	2.090	2.490



Dimension in TO-252 (Unit: mm)



Symbol	MILLIMETERS	
	Min.	Max.
A	6.300	6.900
A1	0	0.130
B	5.700	6.300
C	2.100	2.500
D	0.300	0.600
E1	0.600	0.900
E2	0.700	1.000
F	0.300	0.600
G	0.700	1.200
L1	9.600	10.500
L2	2.700	3.100
H	0.600	1.000
M	5.100	5.500
N	2.090	2.490
R	0.300	
T	1.400	1.600
Y	5.100	6.300



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