Microtriggered low power thyristor

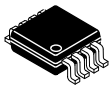
Features

- $I_{T\,(AV)}$: 0.3 A
- V_{DRM} : 600 V
- I_{GT} : 100 μA

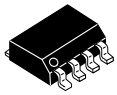
Outline

- Non-Insulated Type
- Glass Passivation Type

DFN−8* D SUFFIX
HT03ARDZ-12



MSOP−8 M SUFFIX
HT03ARMZ-12

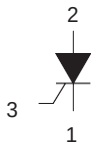


SOP−8 R SUFFIX
HT03ARZ-12

TO92 M SUFFIX
HT03AM-12

TO-92-3L T SUFFIX
HT03ARTZ-12

(Package name:TO-92-3L)



1. Cathode
2. Anode
3. Gate

Applications

Leakage protector, timer, and gas igniter

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak reverse voltage	V_{RRM}	600	V
Non-repetitive peak reverse voltage	V_{RSM}	800	V
DC reverse voltage	$V_{R(DC)}$	480	V
Repetitive peak off-state voltage[Note1]	V_{DRM}	600	V
Non-repetitive peak off-state voltage[Note1]	V_{DSM}	800	V
DC off-state voltage[Note1]	$V_{D(DC)}$	480	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	0.47	A	
Average on-state current	$I_{T\ (AV)}$	0.3	A	Commercial frequency, sine half wave 180° conduction, Ta = 47°C
Surge on-state current	I_{TSM}	20	A	60Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	1.6	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	0.5	W	
Average gate power dissipation	$P_{G\ (AV)}$	0.1	W	
Peak gate forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	6	V	
Peak gate forward current	I_{FGM}	0.3	A	
Junction temperature	Tj	– 40 to +110	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	0.23	g	Typical value

Notes: 1. With gate to cathode resistance R_{GK} = 1 kΩ.

Electrical Characteristics

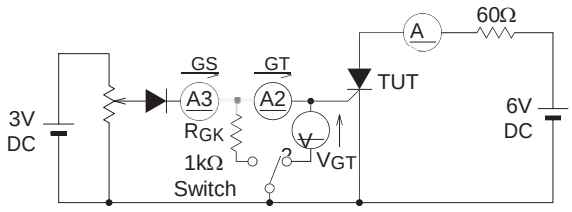
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.1	mA	Tj = 110°C, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	0.1	mA	Tj = 110°C, V_{DRM} applied, R_{GK} = 1 kΩ
On-state voltage	V_{TM}	—	—	1.8	V	Ta = 25°C, I_{TM} = 4 A, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	Tj = 25°C, V_D = 6 V, I_T = 0.1 A[Note3]
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	Tj = 110°C, V_D = 1/2 V_{DRM}, R_{GK} = 1 kΩ
Gate trigger current	I_{GT}	1	—	100[Note2]	μA	Tj = 25°C, V_D = 6 V, I_T = 0.1 A[Note3]
Holding current	I_H	—	1.5	3	mA	Tj = 25°C, V_D = 12 V, R_{GK} = 1 kΩ
Thermal resistance	$R_{th\ (j-a)}$	—	—	180	°C/W	Junction to ambient

Notes: 2. Please refer to the last letter of the model on the label for IGT value. If special IGT values are required, select item D or E in the table below. If you need a specified IGT value, contact the manufacturer.

Item	A	B	C	D	E
I_{GT} (μA)	10 to 20	20 to 30	30 to 40	10 to 40	1 to 100

The above values do not include the current flowing through the 1 kΩ resistance between the gate and cathode.

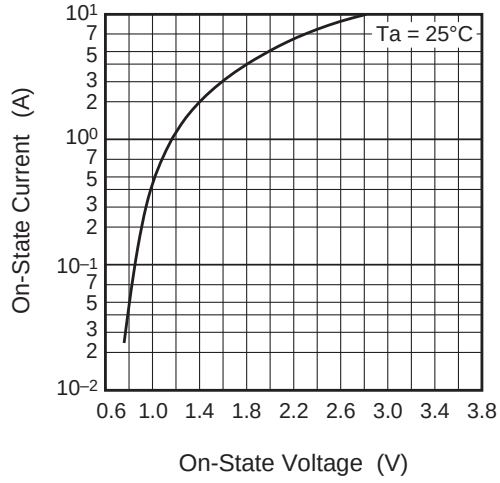
3 I_{GT}, V_{GT} measurement circuit.



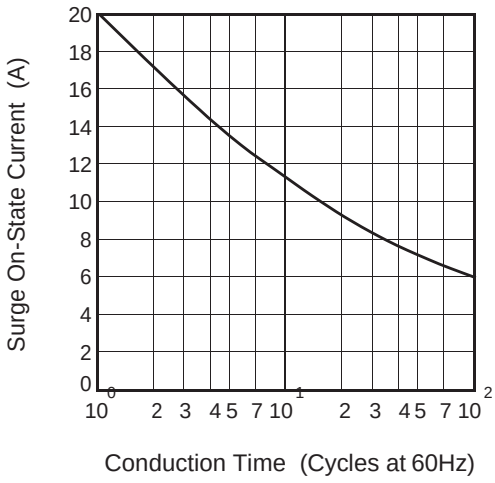
Switch 1 : I_{GT} measurement
Switch 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1kΩ)

Performance Curves

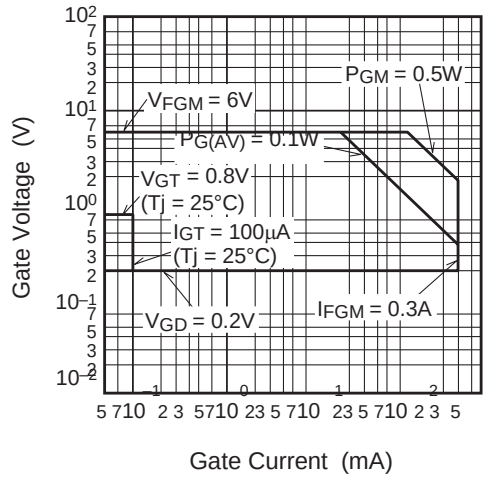
Maximum On-State Characteristics



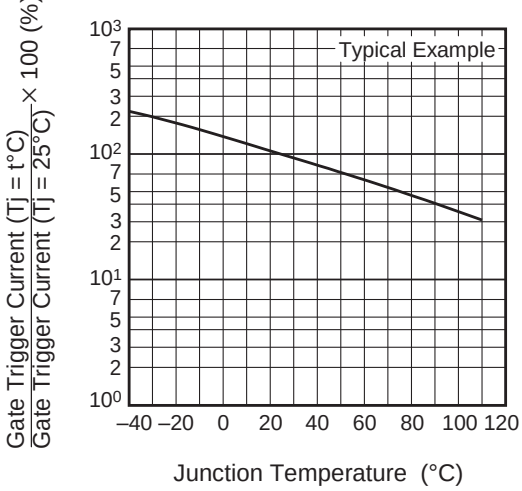
Rated Surge On-State Current



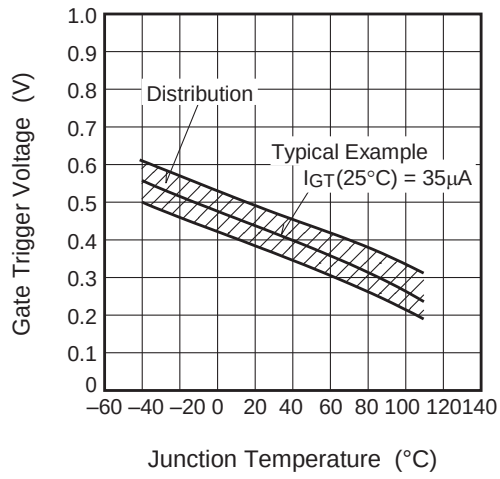
Gate Characteristics



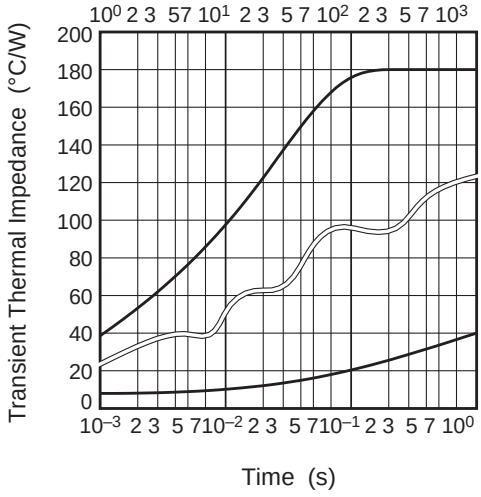
Gate Trigger Current vs. Junction Temperature



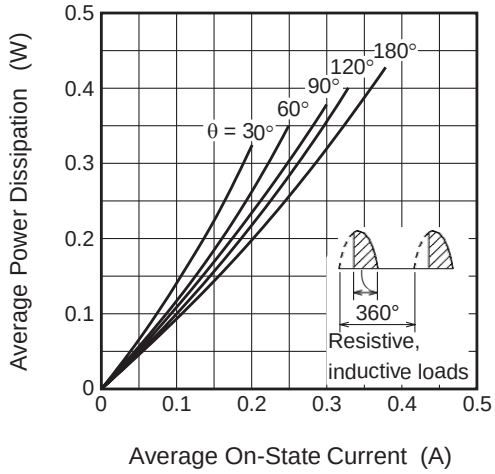
Gate Trigger Voltage vs. Junction Temperature



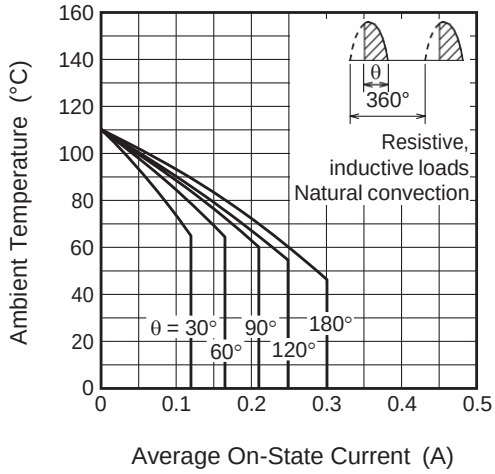
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



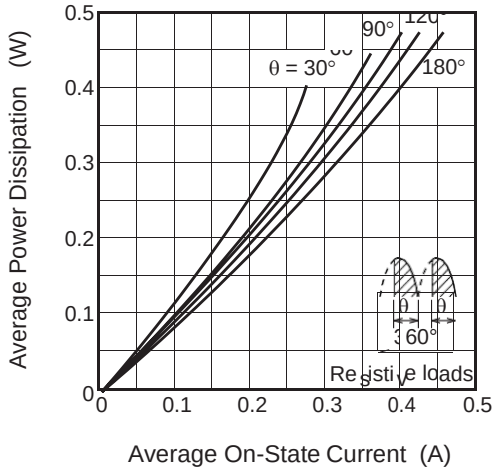
Maximum Average Power Dissipation
(Single-Phase Half Wave)



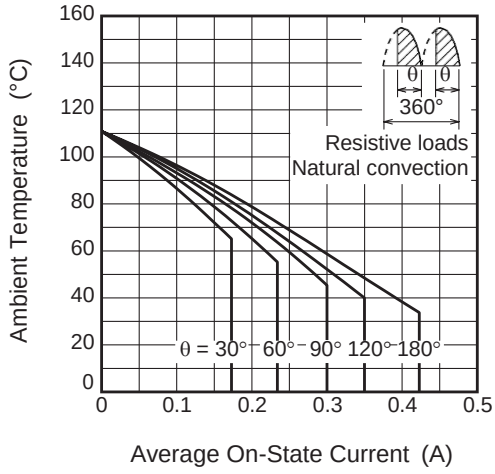
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



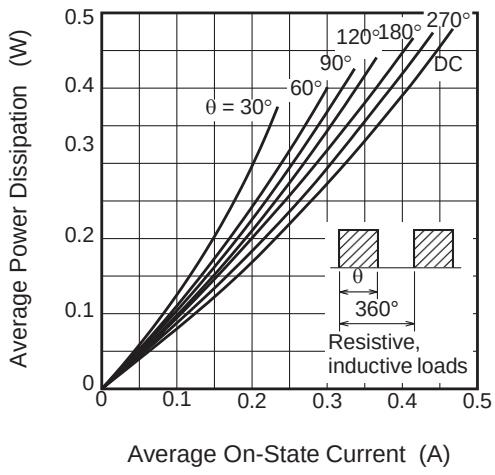
Maximum Average Power Dissipation
(Single-Phase Full Wave)



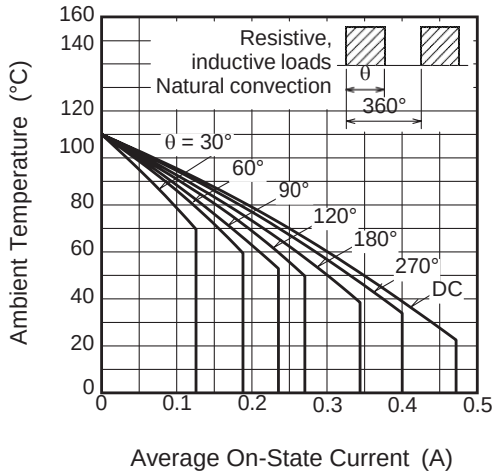
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



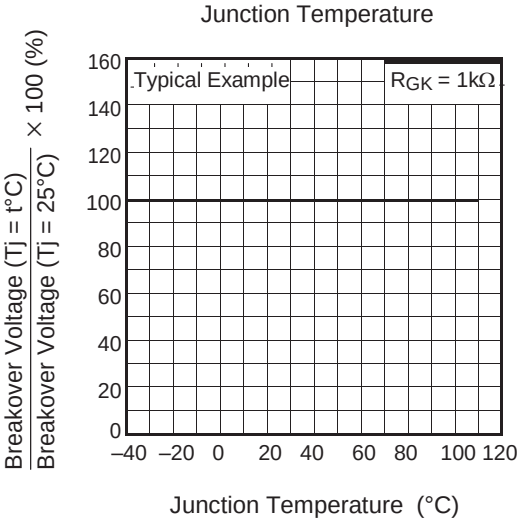
Maximum Average Power Dissipation
(Rectangular Wave)



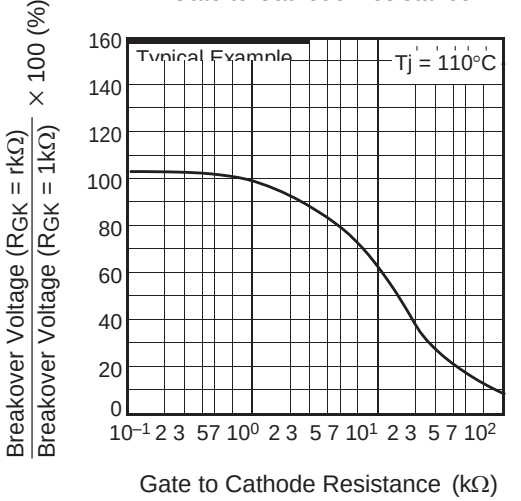
Allowable Ambient Temperature vs.
Average On-State Current
(Rectangular Wave)



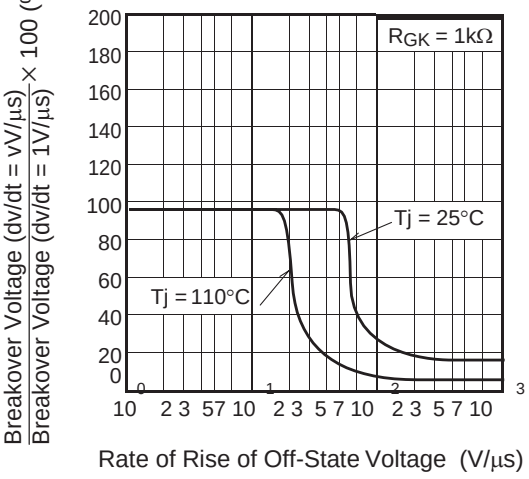
Breakover Voltage vs.
Junction Temperature



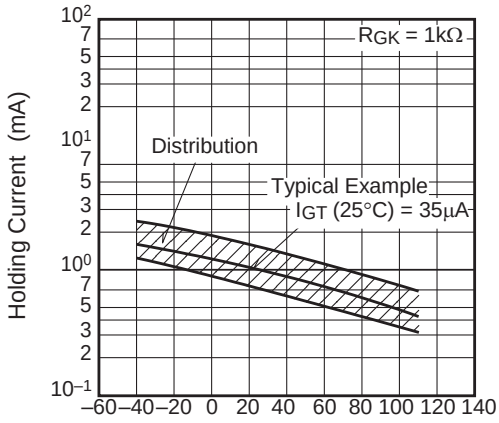
Breakover Voltage vs.
Gate to Cathode Resistance



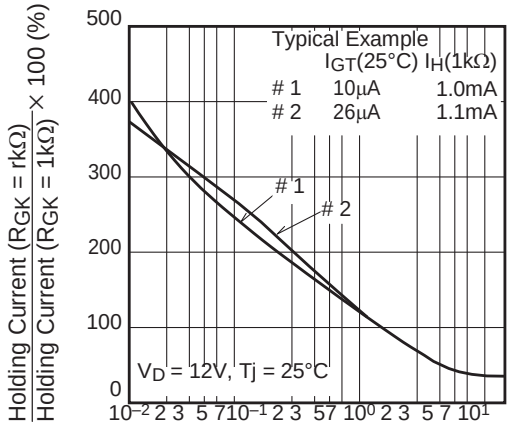
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



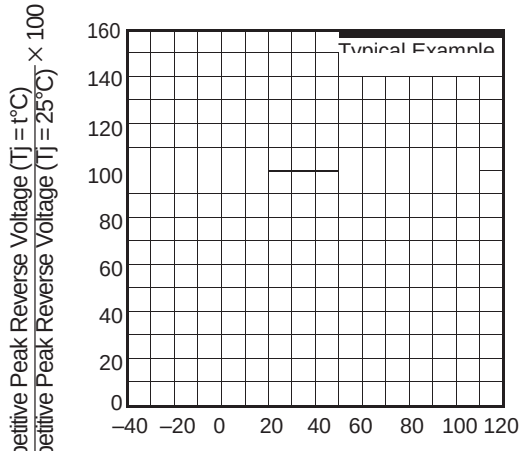
Holding Current vs.
Junction Temperature



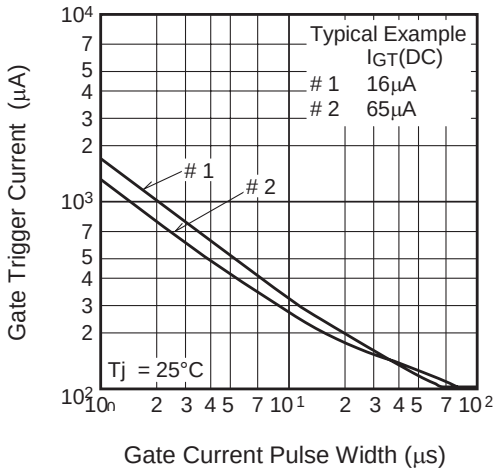
Holding Current vs.
Gate to Cathode Resistance



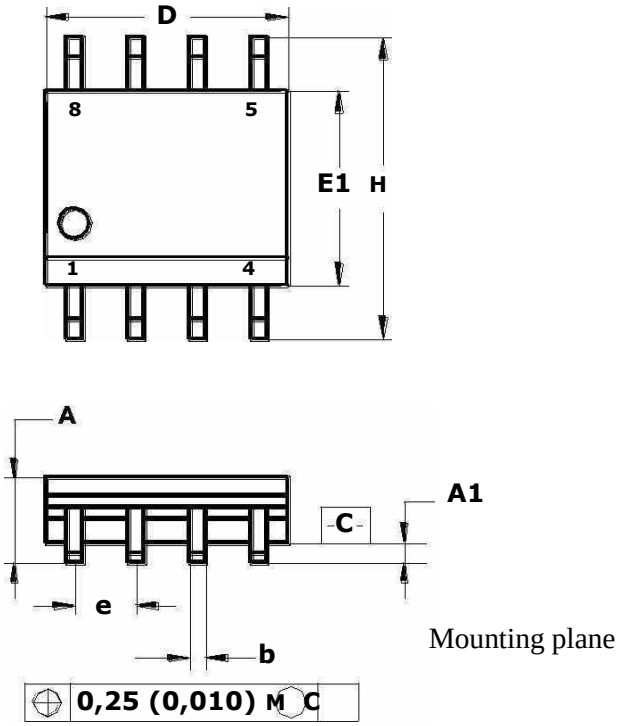
Repetitive Peak Reverse Voltage vs.
Junction Temperature



Gate Trigger Current vs.
Gate Current Pulse Width



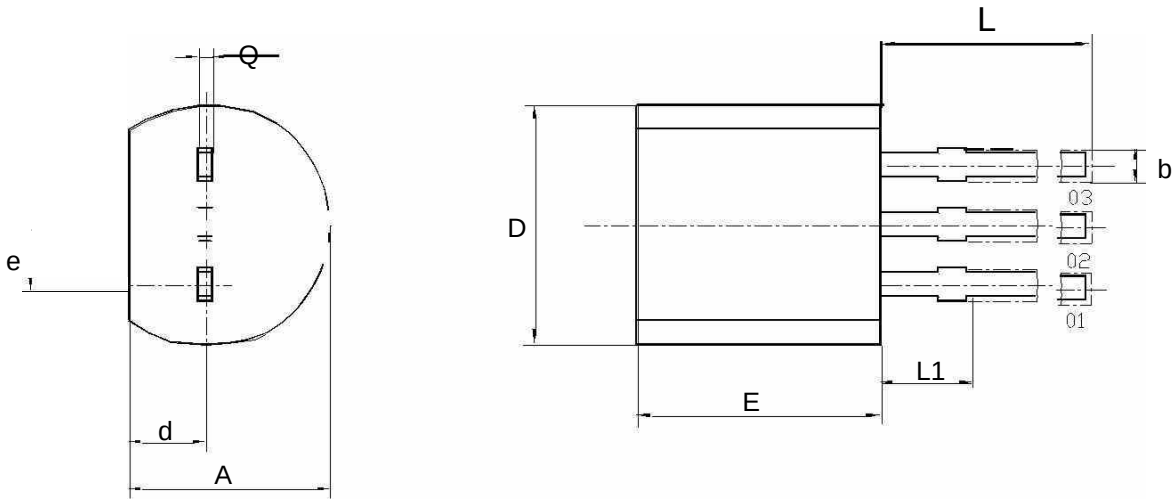
SOP8 150mil



Note – Dimensions D, E1 do not include the value of fin, which should not exceed 0,25 (0,010) per side.

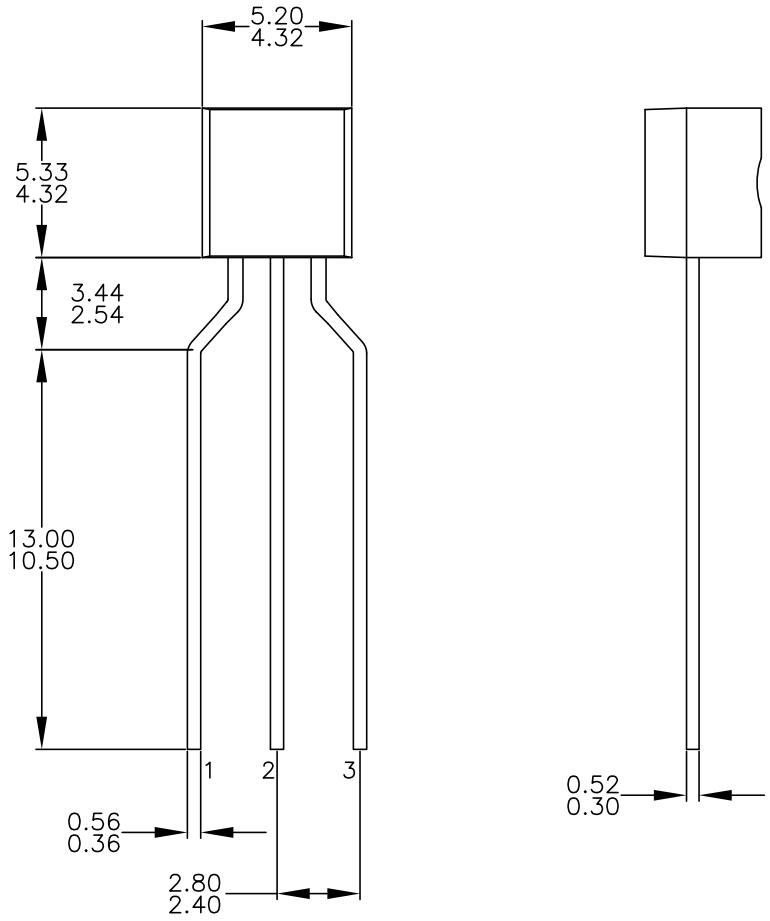
	D	E1	H	b	e	α	A	A1	c	L	h
Millimeters											
min	4.80	3.80	5.80	0.33		0°	1.35	0.10	0.19	0.41	0.25
max	5.00	4.00	6.20	0.51	1.27	8°	1.75	0.25	0.25	1.27	0.50
Inches											
min	0.1890	0.1497	0.2284	0.013		0°	0.0532	0.0040		0.016	0.0099
max	0.1968	0.1574	0.2440	0.020	0.100	8°	0.0688	0.0090		0.050	0.0196

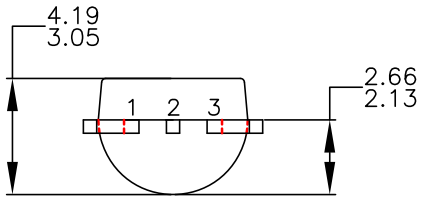
TO92



Dimensions	mm	
	min	max
E	4,6	5,1
b	-	0,5
D	4,6	5
d	1,25	1,65
A	3,5	3,8
e	1,2573	1,2827
L	12,5	14,5
L1	-	2
Q	-	0,5

TO-92-3L





NOTES: UNLESS OTHERWISE SPECIFIED

A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
B. ALL DIMENSIONS ARE IN MILLIMETERS.
C. DRAWING CONFORMS TO ASME Y14.5M-2009.
D. DRAWING FILENAME: MKT-ZA03FREV3.
E. FAIRCHILD SEMICONDUCTOR.