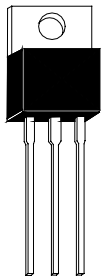
HBT139XE

Three Quadrant Triac



TO-220AB

Description

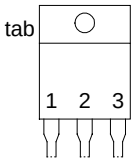
Passivated, sensitive gate triacs in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

Quick Reference Data

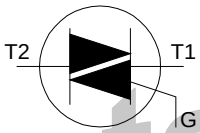
Part No.	V_{DRM}(V)	$I_{T(RMS)}$(A)	I_{TSM} (A)	Quadrant
HBT139DE	600	16	140	I - II - III

Pin Configuration

Pin	Description
1	Main terminal 1
2	Main terminal 2
3	Gate
tab	Main terminal 2



Symbol



Limtiing Values

Symbol	Parameter	Min.	Max.	Units
V_{DRM}	Repetitive peak off-state voltages	-	600	V
$I_{T(RMS)}$	RMS on-state current	-	16	A
I_{TSM}	Non-repetitive peak on-state current	-	140	A
I^2t	I^2t for fusing	-	98	A^2S
dI_T/dt	Repetitive rate of rise of on-state current after triggering T2+ G+	-	50	A/us
	T2+ G-	-	50	A/us
	T2- G-	-	50	A/us
	T2- G+	-	-	A/us
I_{GM}	Peak gate current	-	2	A
V_{GM}	Peak gate voltage	-	10	V
P_{GM}	Peak gate power	-	5	W
$P_{G(AV)}$	Average gate power	-	0.5	W
Tstg	Storage Temperature Range	-	150	°C
Tj	Operating junction temperature	-40	125	°C

Static Characteristics (Ta=25°C)

Symbol	Parameter	Conditions	Rank	Unit
			V	
I_{GT}	Gate Trigger Current	V_D=6V, R_L=10Ω, T2+ G+	25	mA
		V_D=6V, R_L=10Ω, T2+ G-	25	mA
		V_D=6V, R_L=10Ω, T2- G-	25	mA
		V_D=6V, R_L=10Ω, T2- G+	-	mA
I_L	Latching Current	V_D=6V, R_L=10Ω, T2+ G+	20	mA
		V_D=6V, R_L=10Ω, T2+ G-	30	mA
		V_D=6V, R_L=10Ω, T2- G-	30	mA
		V_D=6V, R_L=10Ω, T2- G+	-	mA
I_H	Holding Current	V_D=12V, I_{GT}=0.1A	30	mA
V_T	On-state Voltage	I_T=25A	1.5	V
V_{GT}	Gate Trigger Voltage	V_D=6V, R_L=10Ω, T2+ G+	1.5	V
		V_D=6V, R_L=10Ω, T2+ G-	1.5	V
		V_D=6V, R_L=10Ω, T2- G-	1.5	V
		V_D=6V, R_L=10Ω, T2- G+	-	V
I_D	Off-state Leakage Current	V_D=V_{DRM}	500	uA

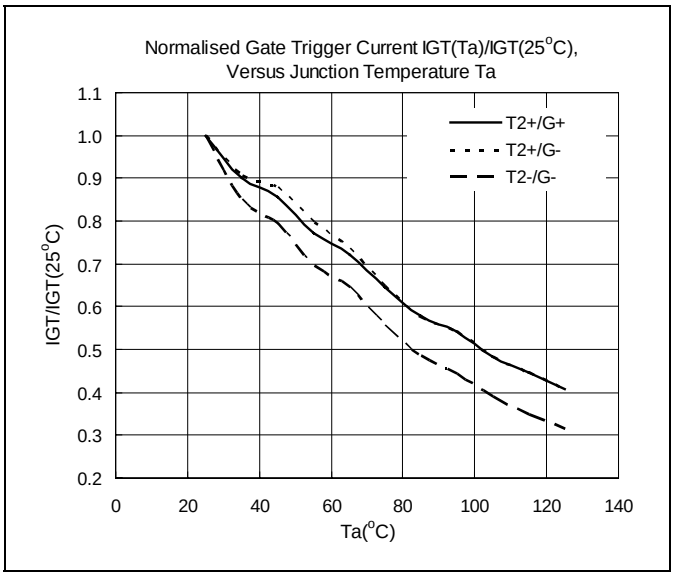
Static Characteristics

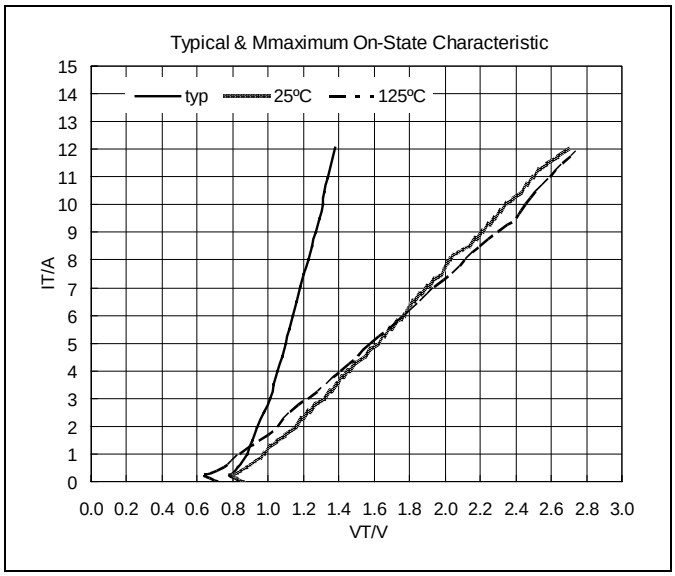
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
dV_D/dt	Critical rate of rise of off-state voltage	V_{DM}=67% $V_{DRM(max)}$; Tj= 125°C; exponential waveform; gate open circuit	-	50	-	V/us
tgt	Gate controlled turn-on time	I_{TM}=6A; V_D=$V_{DRM(max)}$; I_G=0.1A; dI_G/dt=5A/us	-	2	-	us

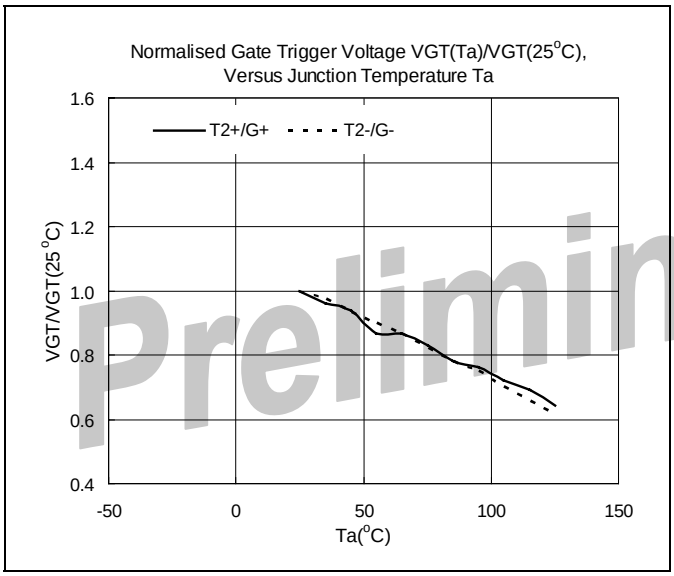
Thermal Resistances

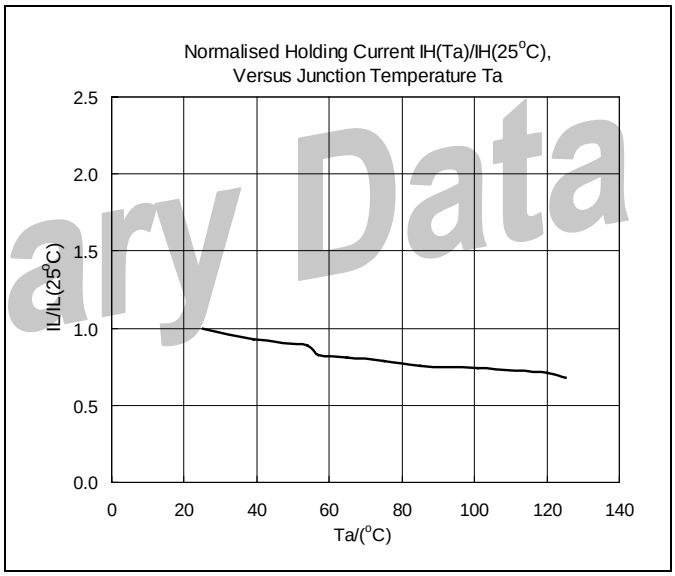
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Rth j-mb	Thermal resistance junction to mounting base	Full cycle	-	-	1.2	K/W
		Half cycle	-	-	1.7	K/W
Rth j-a	Thermal resistance junction to ambient	In free air	-	60	-	K/W

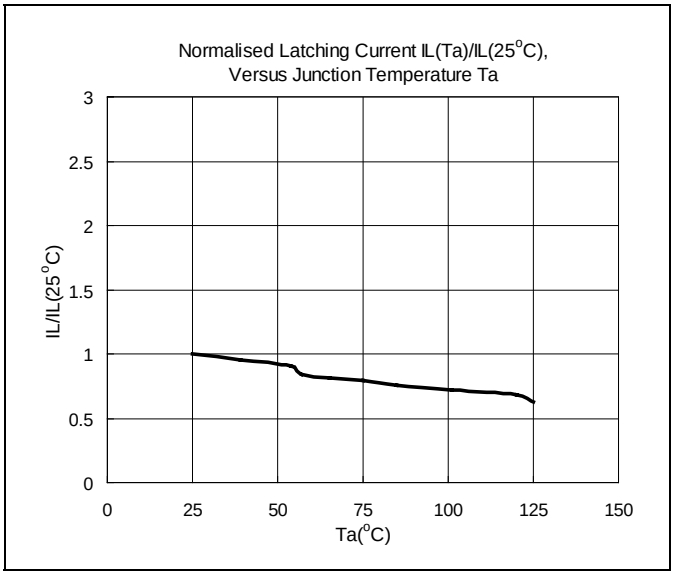
Characteristics Curve



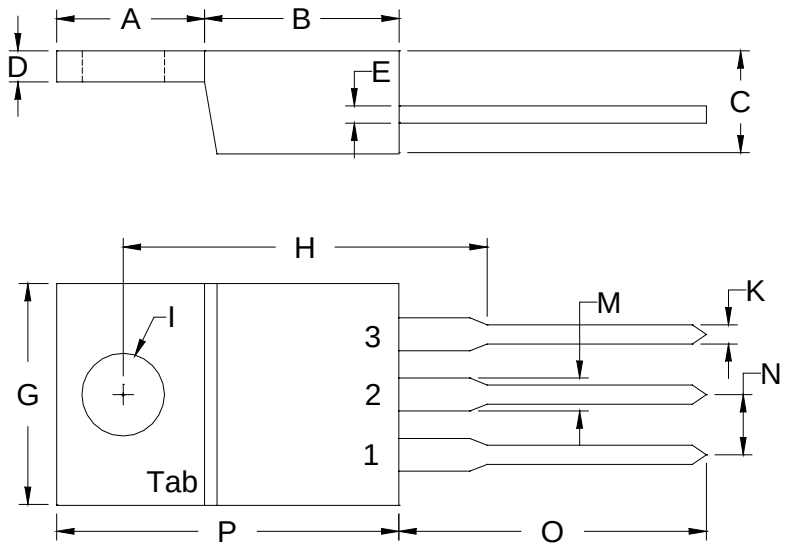




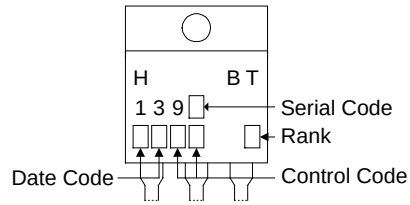




TO-220AB Dimension



Marking:



Style: Pin 1. Main terminal 1
2. Main terminal 2
3. Gate
Tab connected to main terminal 2

3-Lead TO-220AB Plastic Package
HSMC Package Code: E

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2197	0.2949	5.58	7.49	I	-	*0.1508	-	*3.83
B	0.3299	0.3504	8.38	8.90	K	0.0295	0.0374	0.75	0.95
C	0.1732	0.185	4.40	4.70	M	0.0449	0.0551	1.14	1.40
D	0.0453	0.0547	1.15	1.39	N	-	*0.1000	-	*2.54
E	0.0138	0.0236	0.35	0.60	O	0.5000	0.5618	12.70	14.27
G	0.3803	0.4047	9.66	10.28	P	0.5701	0.6248	14.48	15.87
H	-	*0.6398	-	*16.25					

Notes: 1.Dimension and tolerance based on our Spec. dated Sep. 07,1997.
2.Controlling dimension: millimeters.
3.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
4.If there is any question with packing specification or packing method, please contact your local HSMC sales office.

Material:

- Lead: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

Head Office And Factory:

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