

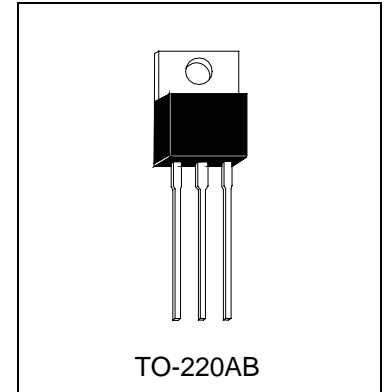


HBT139XE

Three Quadrant Triac

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		Symbol
1	Main terminal 1		
2	Main terminal 2		
3	Gate		
tab	Main terminal 2		

Limiting 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 ² S
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

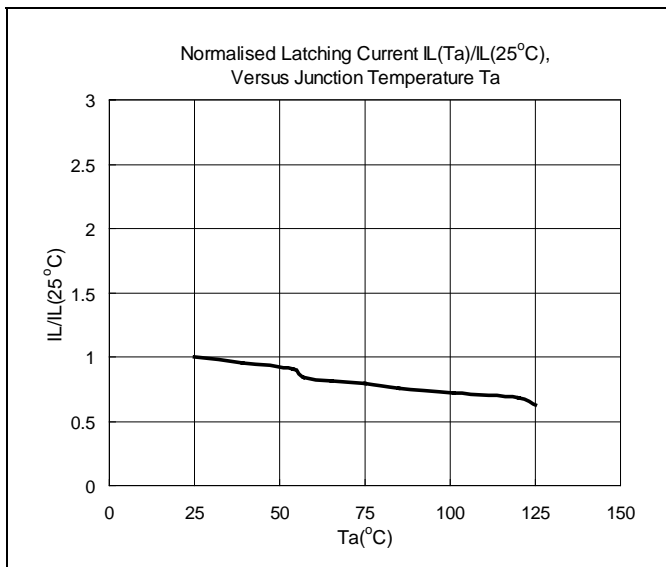
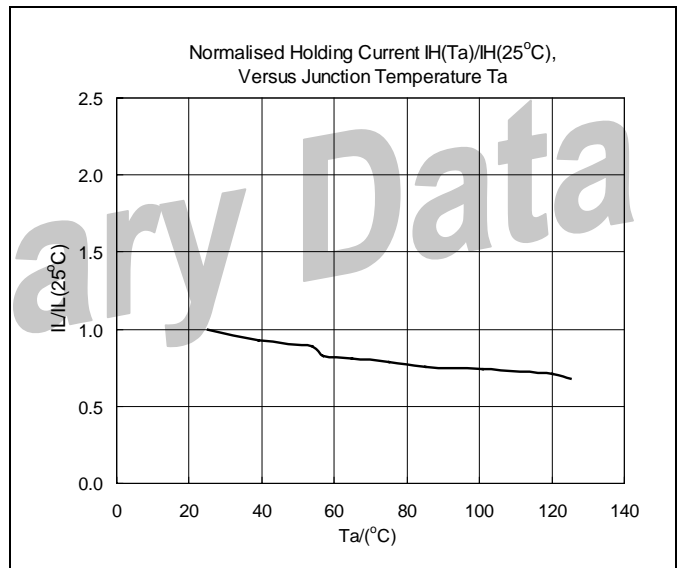
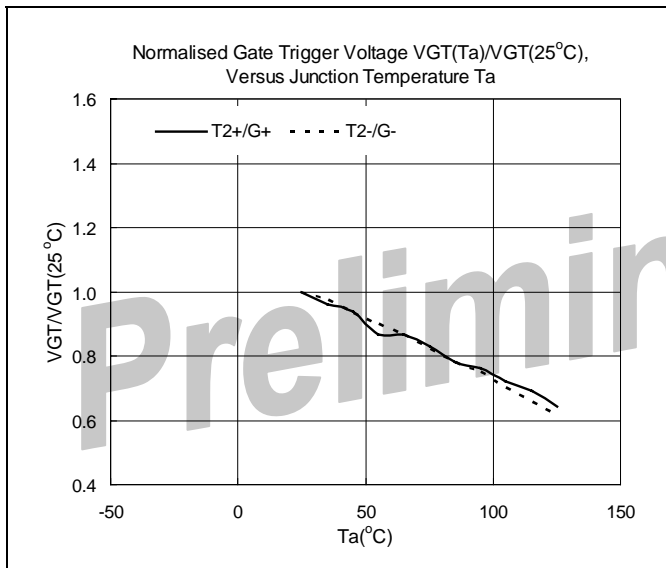
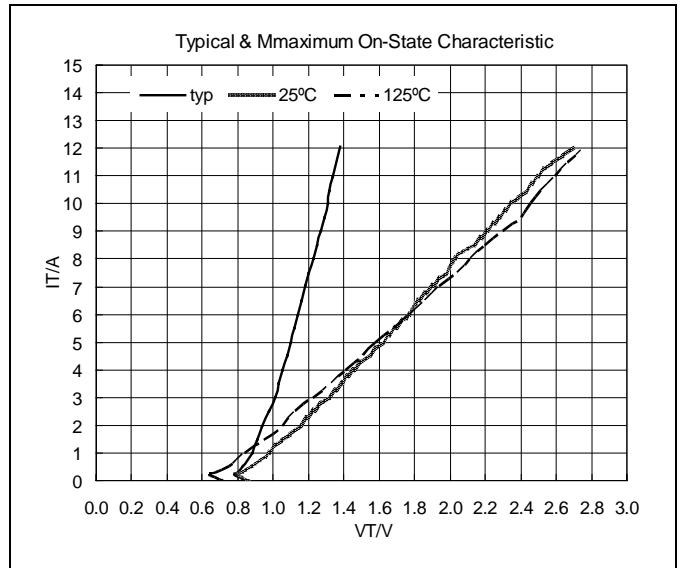
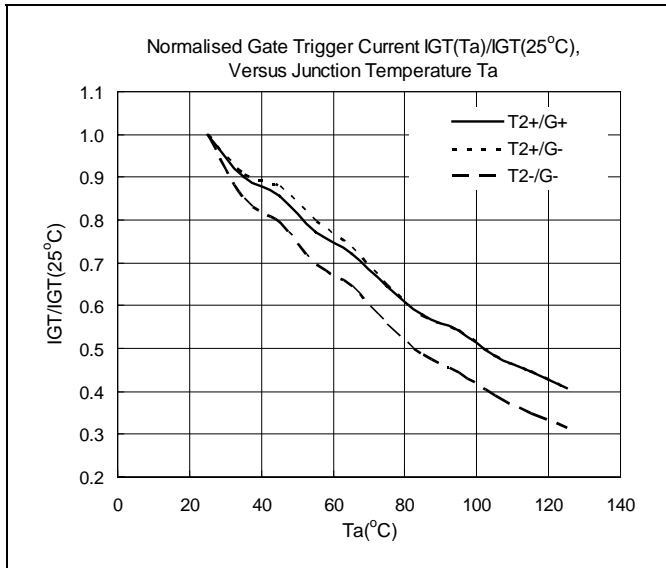
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
dV _D /dt	Critical rate of rise of off-state voltage	V _{DM} =67% V _{DRM(max)} ; T _j = 125°C; exponential waveform; gate open circuit	-	50	-	V/us
t _{gt}	Gate controlled turn-on time	I _{TM} =6A; V _D =V _{DRM(max)} ; I _G =0.1A; dI _G /dt=5A/us	-	2	-	us

Thermal Resistances

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

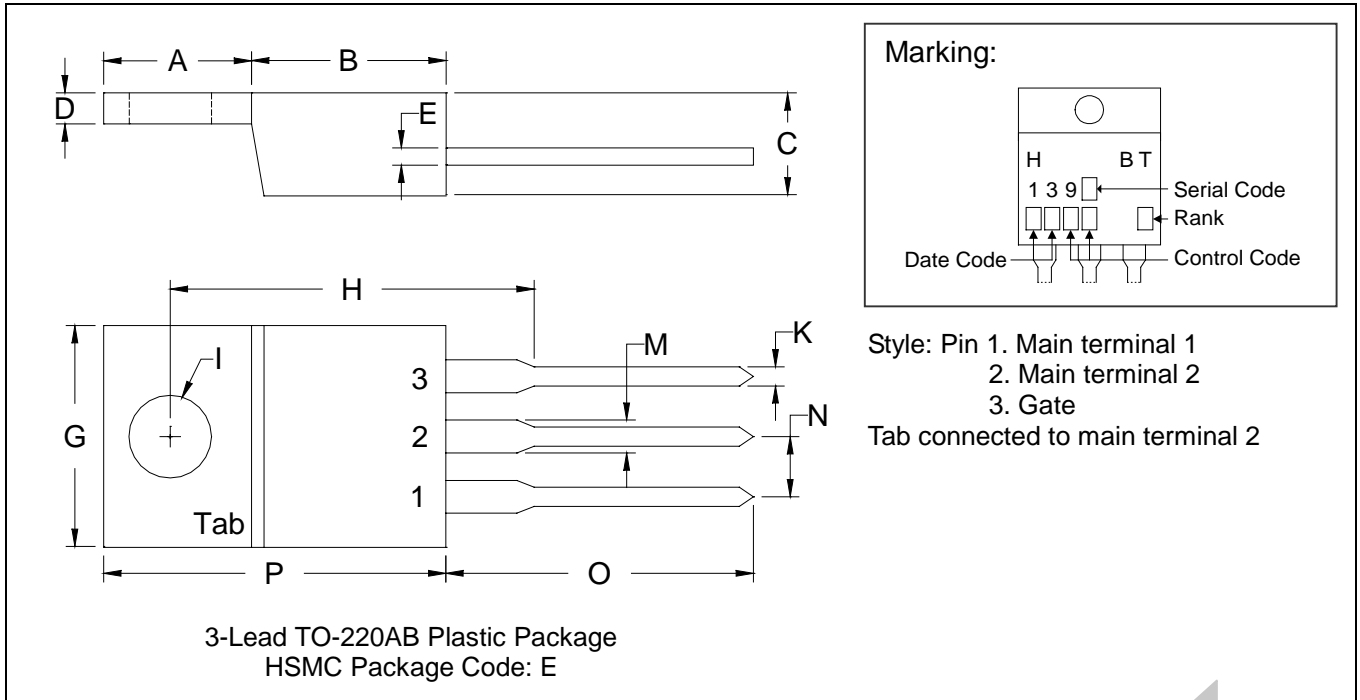


Characteristics Curve

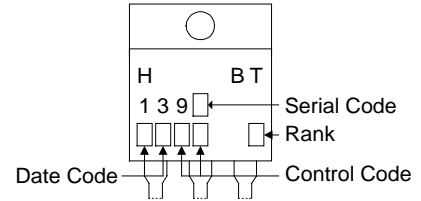




TO-220AB Dimension



Marking:



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

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

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Head Office And Factory:

- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
 Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
 Tel: 886-3-5983621~5 Fax: 886-3-5982931