

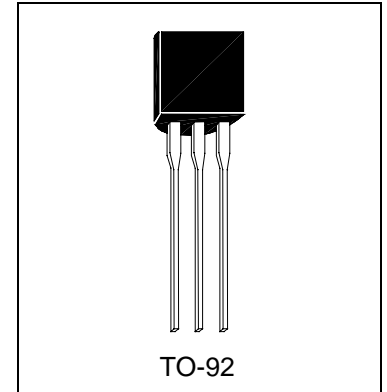


HBT131XA Series

Triac, Logic Level & Standard

Description

Passivated, sensitive gate triacs in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.



Quick Reference Data

Part No.	$V_{DRM}(V)$	$I_{T(RMS)}(A)$	$I_{TSM}(A)$	Quadrant
HBT131CA	600	1	10	All
HBT131GA	800	1	10	All

Pin Configuration

Pin	Description		Symbol
1	Main Terminal 1		
2	Gate		
3	Main Terminal 2		

Limiting Values

Symbol	Parameter	Min.	Max.	Units
V_{DRM}, V_{RRM}	HBT131CA Repetitive peak off-state voltages	-	600	V
	HBT131GA Repetitive peak off-state voltages	-	800	V
$I_{T(RMS)}$	RMS on-state current (full sine wave; $T_{lead} \leq 51^{\circ}C$)	-	1	A
I_{TSM}	Non-repetitive peak on-state current (full sine wave; $T_j = 25^{\circ}C$ prior to surge, $t = 20ms$)	-	10	A
I^2t	I^2t for fusing ($t = 10ms$)	-	0.41	A^2S
di_T/dt	Repetitive rate of rise of on-state current after triggering ($I_{TM} = 1.5A; I_G = 0.2A; di_G/dt = 0.2A/us; T2+ G+$)	-	50	A/us
	($I_{TM} = 1.5A; I_G = 0.2A; di_G/dt = 0.2A/us; T2+ G-$)	-	50	A/us
	($I_{TM} = 1.5A; I_G = 0.2A; di_G/dt = 0.2A/us; T2- G-$)	-	50	A/us
	($I_{TM} = 1.5A; I_G = 0.2A; di_G/dt = 0.2A/us; T2- G+$)	-	10	A/us
I_{GM}	Peak gate current	-	1	A
V_{GM}	Peak gate voltage	-	6	V
P_{GM}	Peak gate power	-	1	W
$P_{G(AV)}$	Average gate power (over any 20ms period)	-	0.1	W
T_{stg}	Storage temperature	-40	150	$^{\circ}C$
T_j	Operating junction temperature	-40	125	$^{\circ}C$



HBT131CA / HBT131GA

Static Characteristics (T_j=25°C, unless otherwise stated, 4 Quadrant)

Symbol	Parameter	Conditions	Rank			Unit
			S	T	U	
I _{GT}	Gate Trigger Current	V _D =6V, R _L =10Ω, T2+ G+	3	5	10	mA
		V _D =6V, R _L =10Ω, T2+ G-	3	5	10	mA
		V _D =6V, R _L =10Ω, T2- G-	3	5	10	mA
		V _D =6V, R _L =10Ω, T2- G+	7	10	25	mA
I _L	Latching Current	V _D =6V, R _L =10Ω, T2+ G+	5	5	5	mA
		V _D =6V, R _L =10Ω, T2+ G-	8	8	8	mA
		V _D =6V, R _L =10Ω, T2- G-	5	5	5	mA
		V _D =6V, R _L =10Ω, T2- G+	8	8	8	mA
I _H	Holding Current	V _D =6V, I _{GT} =0.1A	9	9	9	mA
V _T	On-state Voltage	I _T =1.2A	1.5	1.5	1.5	V
V _{GT}	Gate Trigger Voltage	V _D =6V, R _L =10Ω, T2+ G+	1.5	1.5	1.5	V
		V _D =6V, R _L =10Ω, T2+ G-	1.5	1.5	1.5	V
		V _D =6V, R _L =10Ω, T2- G-	1.5	1.5	1.5	V
		V _D =6V, R _L =10Ω, T2- G+	2	2	2	V
I _D	Off-state Leakage Current	V _D =V _{DRM} ; T _j =125°C	0.5	0.5	0.5	mA

Thermal Resistances

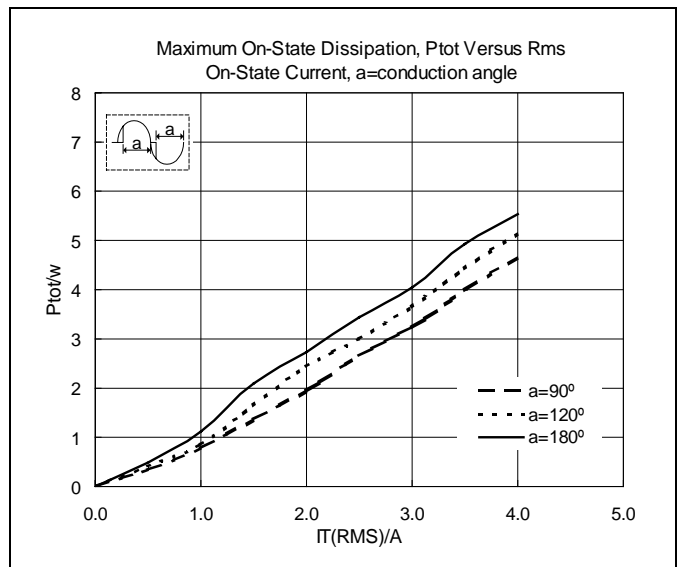
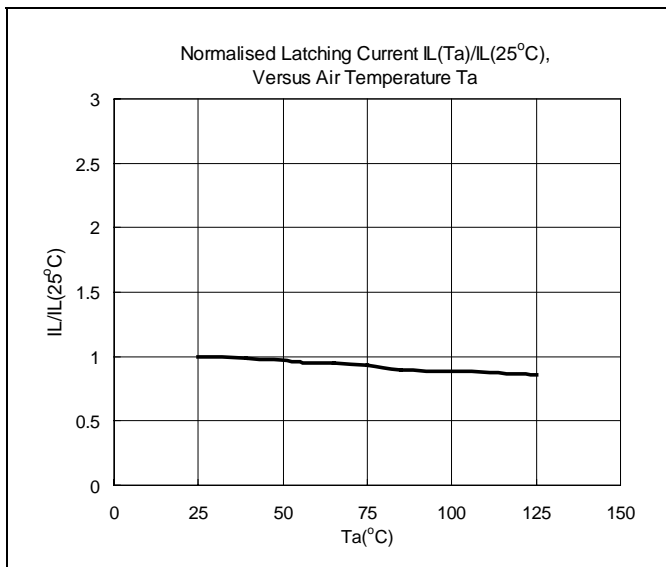
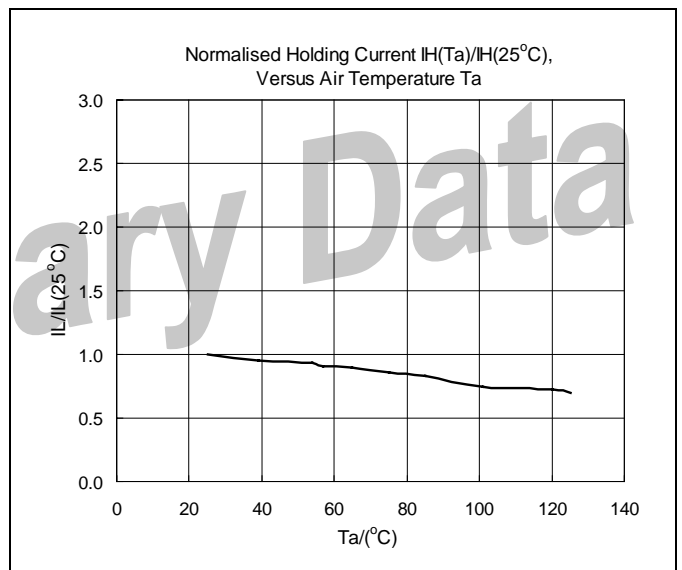
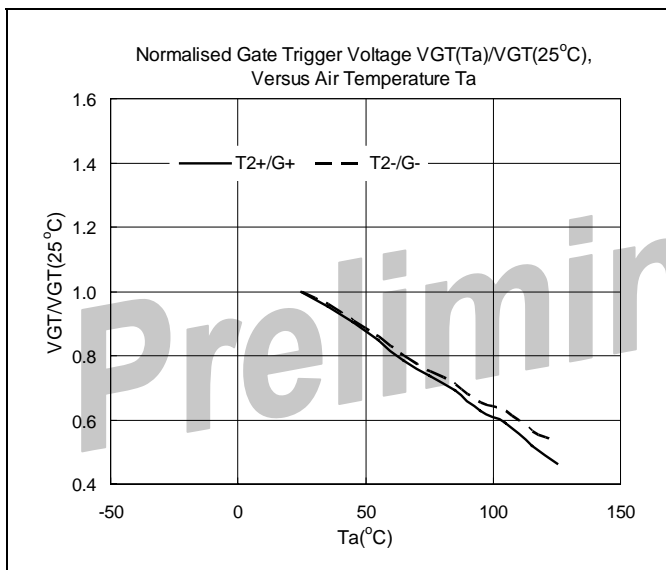
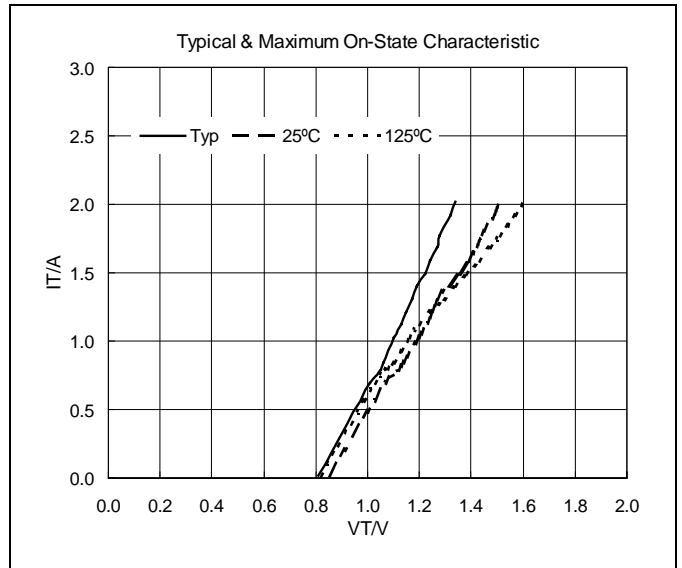
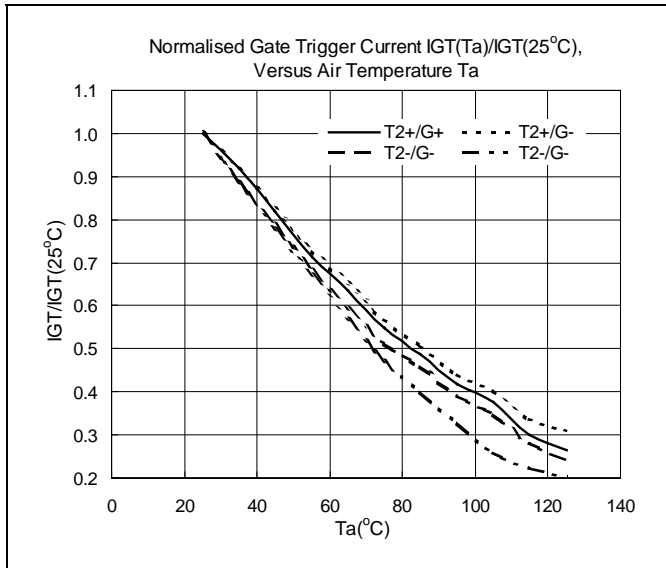
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{th j-lead}	Thermal resistance junction to lead	full cycle	-	-	60	K/W
		half cycle	-	-	80	K/W
R _{th j-a}	Thermal resistance junction to ambient	pcb mounted; lead length=4mm	-	150	-	K/W

Dynamic Characteristics (T_j=25°C, unless otherwise stated)

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; R _{GK} =1kΩ	2.2	15	-	V/us
tgt	Gate controlled turn-on time	I _{TM} =1.5A; V _D =V _{DRM(max)} I _G =0.1A; dI _G /dt=5A/us	-	2	-	us

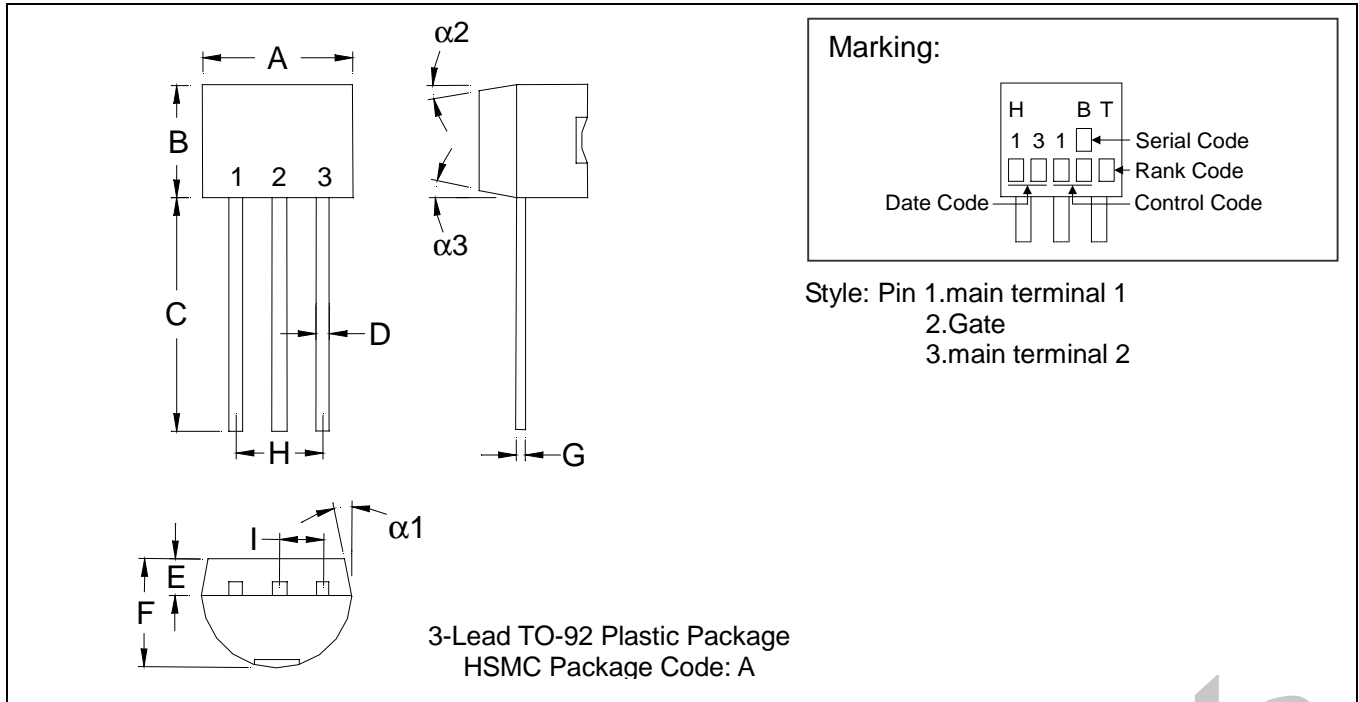


Characteristics Curve





TO-92 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	$\alpha 1$	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	$\alpha 2$	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	$\alpha 3$	-	*2°	-	*2°

- Notes:**
- 1.Dimension and tolerance based on our Spec. dated Apr. 25,1996.
 - 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