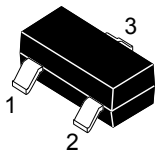
HI-SINCERITY
MICROELECTRONICS CORP.

HMBT2907AXLT1G
General Purpose Transistor PNP Silicon

Features

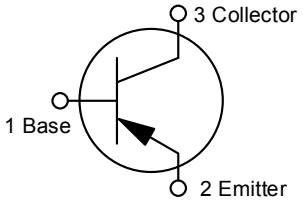
- RoHS Compliant and Halogen Free



SOT-23 (TO-236)

Ordering Information

Device	Marking	Shipping
HMBT2907AXLT1G	2F	3000/Tape & Reel



Maximum Ratings (T_A=25°C)

Parameter	Symbol	Limits	Units
Collector-Emitter Voltage	V_{CEO}	-60	Vdc
Collector-Base Voltage	V_{CBO}	-60	Vdc
Emitter-Base Voltage	V_{EBO}	-5	Vdc
Collector Current-Continuous	I_C	-600	mAdc

Thermal Characteristics

Parameter	Symbol	Limits	Units
Total Device Dissipation FR-5 Board*1, T_A=25°C	P_D	225	mW
Total Device Dissipation, Derate above 25°C	P_D	1.8	mW/°C
Thermal Resistance, Junction to Ambient*1	$R_{\Theta JA}$	556	°C/W
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C

*1 FR-5=1.0x0.75x0.062 in.

Electrical Characteristics (T_A=25°C)

Off Characteristics

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage (I_C=-10mAdc, I_B=0)	$V_{(BR)CEO}$	-60	-	-	V
Collector-Base Breakdown Voltage (I_C=-10uAdc, I_E=0)	$V_{(BR)CBO}$	-60	-	-	V
Emitter-Base Breakdown Voltage (I_E=-10uAdc, I_C=0)	$V_{(BR)EBO}$	-5	-	-	V
Collector Cutoff Current (V_{CB}=-30Vdc, $V_{EB(off)}$=-5.0Vdc)	I_{CEX}	-	-	-10	nA
Collector Cutoff Current (V_{CB}=-50V, I_E=0)	I_{CBO}	-	-	-0.01	uA
Collector Cutoff Current (V_{CB}=-50V, I_E=0, T_A=125°C)	I_{CBO}	-	-	-10	uA
Base Cutoff Current (V_{CE}=-30Vdc, $V_{EB(off)}$=-0.5Vdc)	I_{BL}	-	-	-50	nA

On Characteristics*2

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain (I_C=-0.1mAdc, V_{CE}=-10Vdc)	hFE	75	-	-	-
DC Current Gain (I_C=-1.0mAdc, V_{CE}=-10Vdc)	hFE	100	-	-	-
DC Current Gain (I_C=-10mAdc, V_{CE}=-10Vdc)	hFE	100	-	-	-
DC Current Gain (I_C=-150mAdc, V_{CE}=-10Vdc)	hFE	100	-	300	-
DC Current Gain (I_C=-500mAdc, V_{CE}=-10Vdc)	hFE	50	-	-	-
Collector-Emitter Saturation Voltage (I_C=-150mAdc, I_B=-15mAdc)	$V_{CE(sat)}$	-	-	-0.4	V
Collector-Emitter Saturation Voltage (I_C=-500mAdc, I_B=-50mAdc)	$V_{CE(sat)}$	-	-	-1.6	V
Base-Emitter Saturation Voltage (I_C=-150mAdc, I_B=-15mAdc)	$V_{BE(sat)}$	-	-	-1.3	V
Base-Emitter Saturation Voltage (I_C=-500mAdc, I_B=-50mAdc)	$V_{BE(sat)}$	-	-	-2.2	V

Small Signal Characteristics

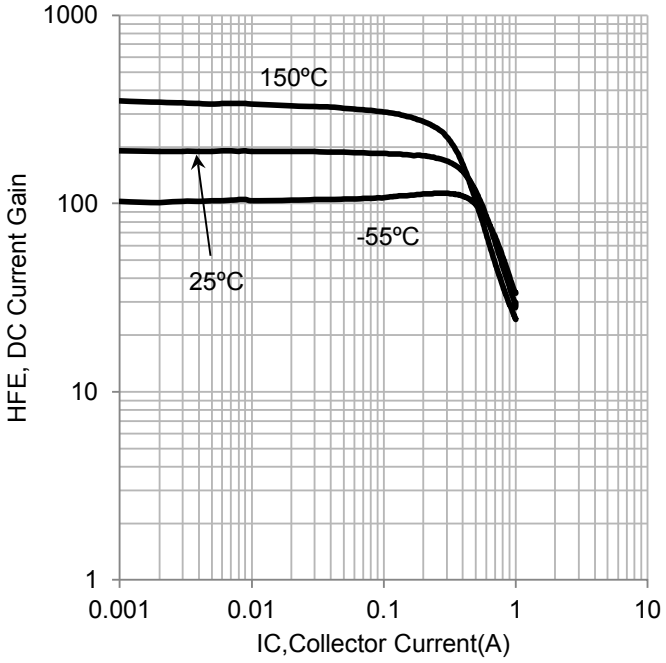
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Current Gain Bandwidth Product (I_C=-50mAdc, V_{CE}=-20Vdc, f=100MHz)	f_T	200	-	-	MHz
Output Capacitance (V_{CB}=-10Vdc, I_E=0, f=1.0MHz)	C_{obo}	-	-	8	pF
Input Capacitance (V_{EB}=-2Vdc, I_C=0, f=1.0MHz)	C_{ibo}	-	-	30	pF

Switching Characteristics

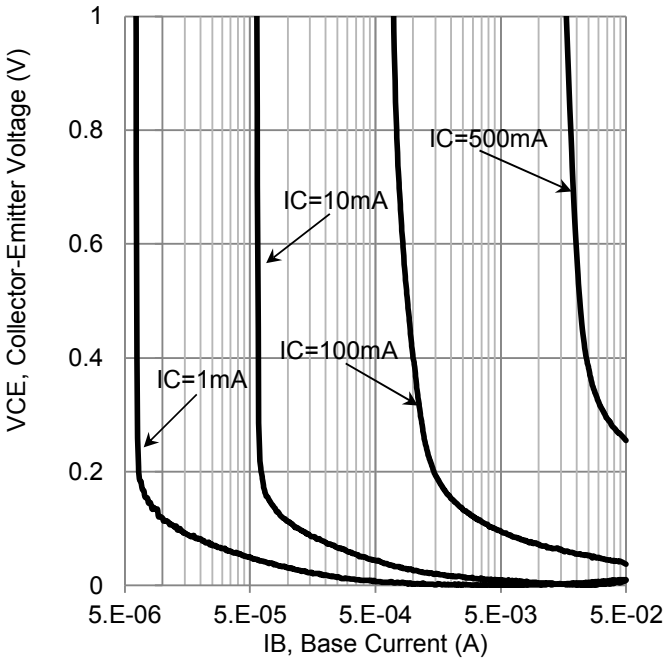
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Turn–On Time (V_{CC}=-30Vdc, I_C=-150mAdc, I_{B1}=-15mAdc)	ton	-	-	45	ns
Delay Time(V_{CC}=-30Vdc, I_C=-150mAdc, I_{B1}=-15mAdc)	td	-	-	10	ns
Rise Time (V_{CC}=-30Vdc, I_C=-150mAdc, I_{B1}=-15mAdc)	tr	-	-	40	ns
Storage Time (V_{CC}=-6Vdc, I_C=-150mAdc, I_{B1}=I_{B2}=-15mAdc)	ts	-	-	225	ns
Fall Time (V_{CC}=-6Vdc, I_C=-150mAdc, I_{B1}=I_{B2}=-15mAdc)	tf	-	-	60	ns
Turn–Off Time (V_{CC}=-6Vdc, I_C=-150mAdc, I_{B1}=I_{B2}=-15mAdc)	toff	-	-	280	ns

*2 Pulse Test: Pulse Width≤300 μs, Duty Cycle≤2.0%

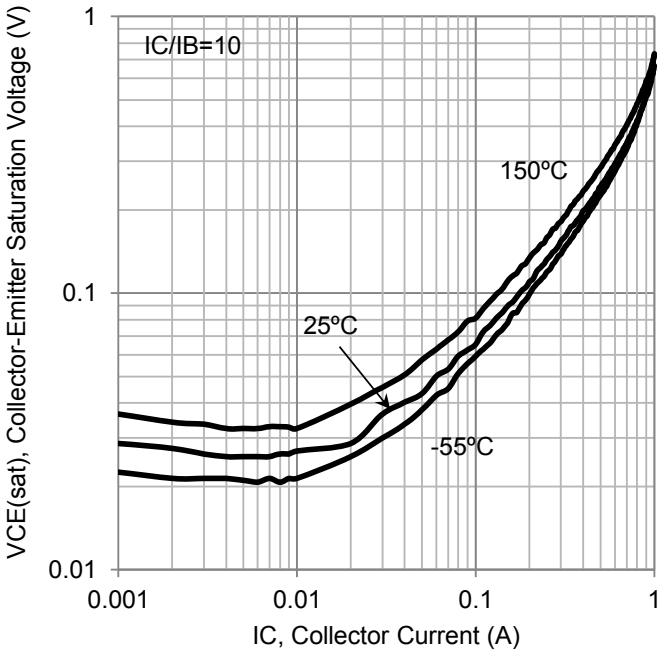
Electrical Characteristics Curves



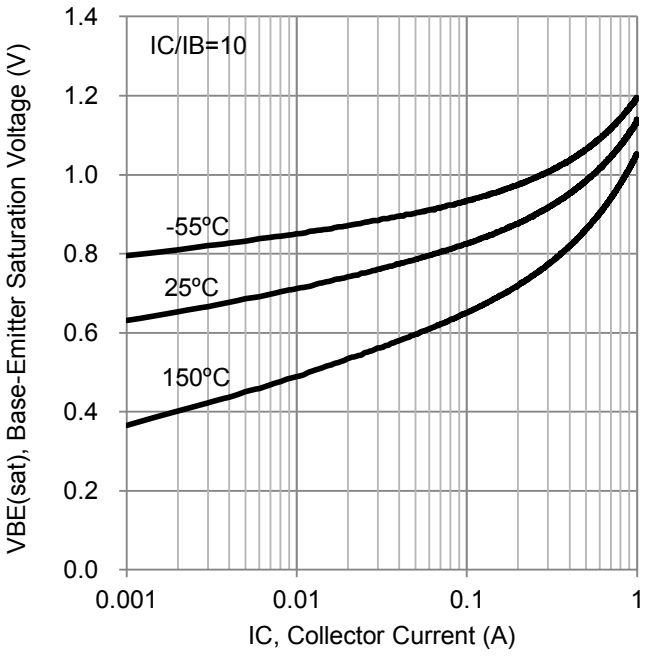
DC Current Gain



Collector Saturation Region

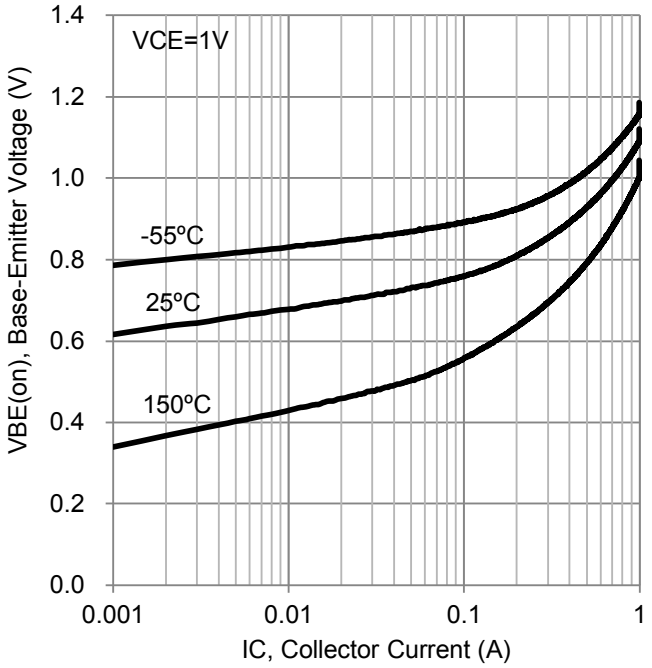


VCE(sat) vs. IC

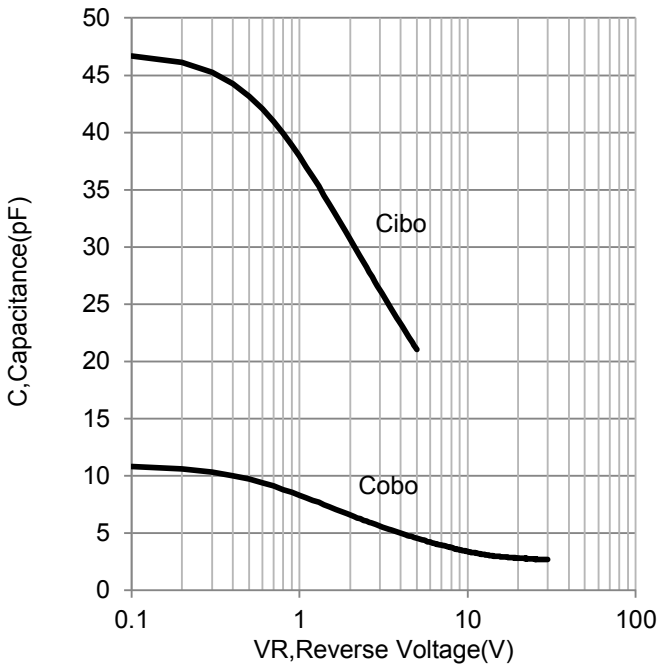


VBE(sat) vs. IC

Electrical Characteristics Curves

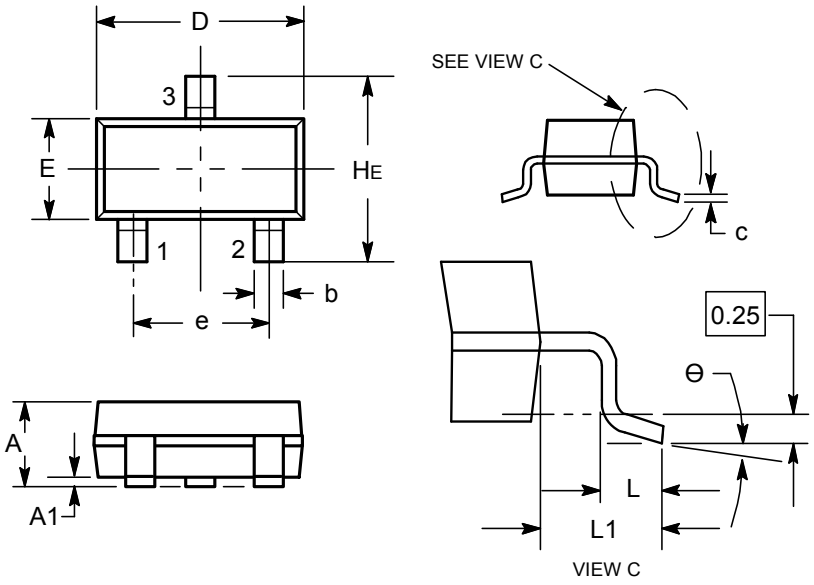


VBE(on) vs. IC



Capacitance

Package Dimension



DIM	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0^O	-	10^O	0^O	-	10^O

Notes:
1. Dimensioning and tolerancing per ansi Y14.5m, 1982.
2. Controlling Dimension: Millimeter.
3. Maximum lead thickness includes lead finish. Minimum lead thickness is the minimum thickness of base material.
4. Dimensions d and e do not include mold flash, protrusions or gate burrs.

Soldering Footprint