

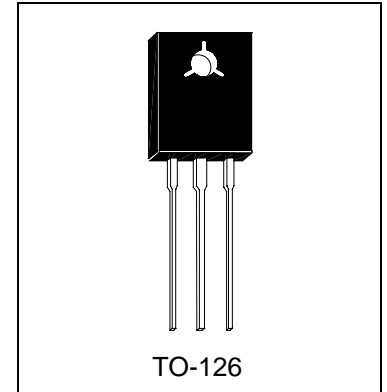


# HBD438T

COMPLEMENTARY SILICON POWER TRANSISTORS

## Description

The HBD438T is silicon epitaxial-base PNP power transistor in TO-126 plastic package, intended for use in medium power linear and switching applications. The complementary NPN type is HBD437T.



## Absolute Maximum Ratings (Ta=25°C)

Symbol	Parameter	Value	Unit
VCBO	Collector-Base Voltage (IE=0)	-45	V
VCES	Collector-Emitter Voltage (VBE=0)	-45	V
VCEO	Collector-Emitter Voltage (IB=0)	-45	V
VEBO	Emitter-Base Voltage (IC=0)	-5	V
IC	Collector Current	-4	A
ICM	Collector Peak Current (t≤10ms)	-7	A
IB	Base Current	-1	A
PD	Total Dissipation at	Tc=25°C	25
		Ta=25°C	1.3
Tstg	Storage Temperature	-55 to 150	°C
Tj	Max. Operating Junction Temperature	150	°C

## Thermal Data

Rthj-case	Thermal Resistance Junction-case	Max.	6	°C/W
Rthj-amb	Thermal Resistance Junction-ambient	Max.	96	°C/W

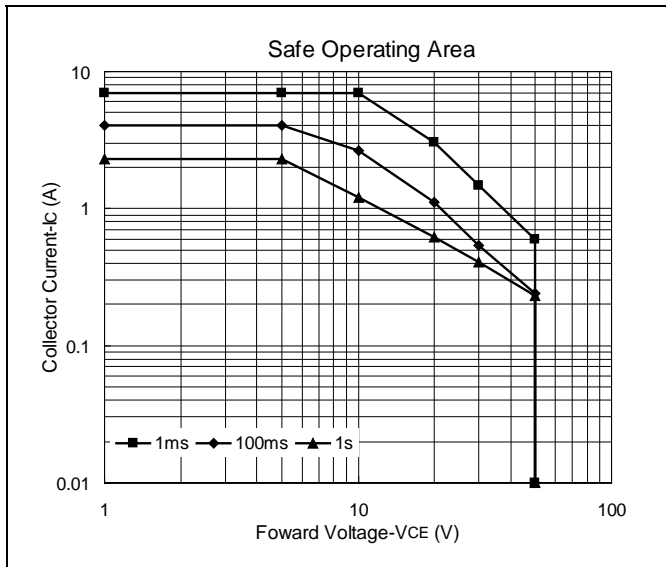
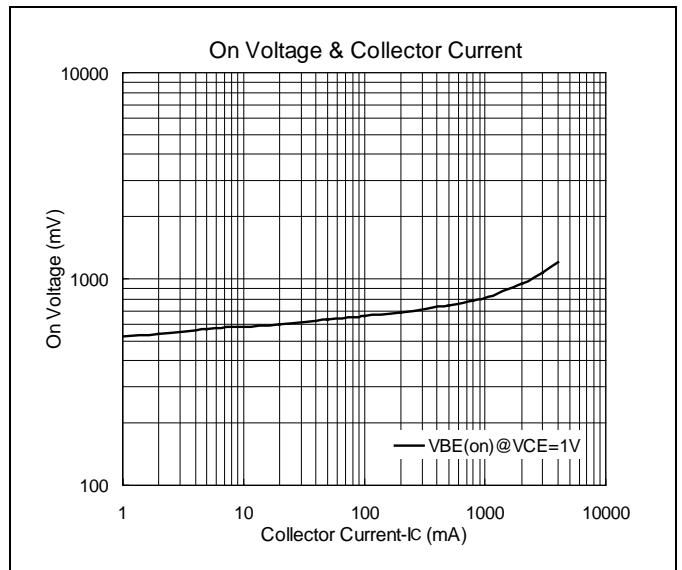
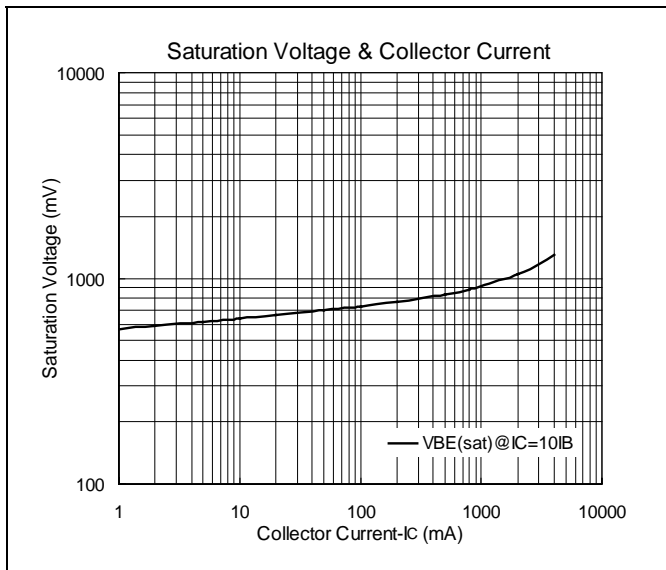
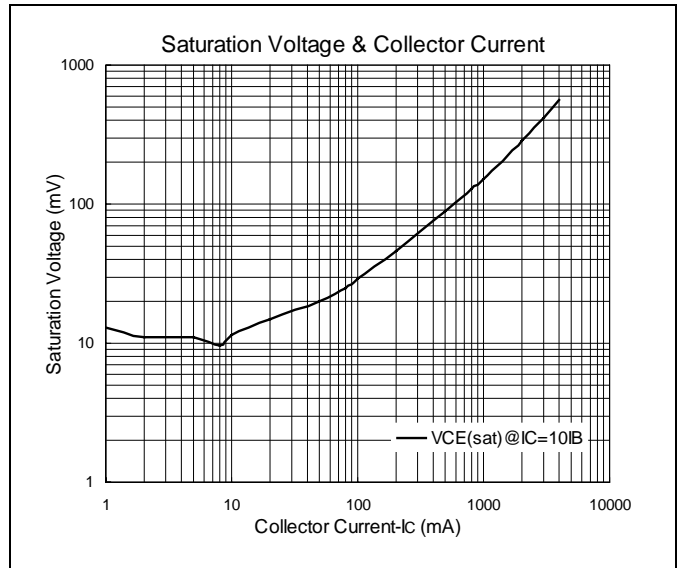
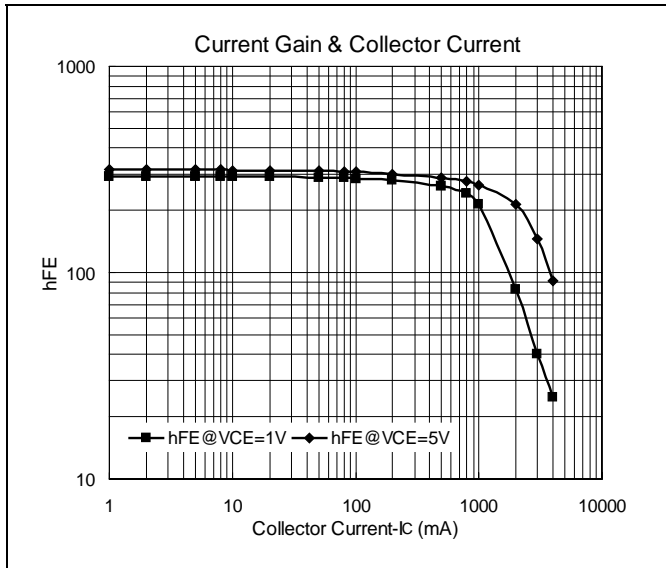
## Electrical Characteristics (Ta=25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
ICBO	Collector Cut-off Current (IE=0)	VCB=-45V	-	-	-100	uA
ICES	Collector Cut-off Current (VBE=0)	VCE=-45V	-	-	-100	uA
IEBO	Emitter Cut-off Current (IC=0)	VEB=-5V			-1	mA
*VCEO(sus)	Collector-Emitter Sustaining Voltage (IB=0)	IC=-100mA	-45	-	-	V
*VCE(sat)	Collector-Emitter Saturation Voltage	IC=-2A, IB=-0.2A	-	-0.2	-0.6	V
*VBE	Base-Emitter Voltage	IC=-10mA, VCE=-5V	-	-0.58	-	V
		IC=-2A, VCE=-1V	-	-	-1.2	V
*hFE	DC Current Gain	IC=-10mA, VCE=-5V	30	130	-	
		IC=-0.5A, VCE=-1V	85	140	-	
		IC=-2A, VCE=-1V	40	-	-	
fT	Transition Frequency	IC=-0.25A, VCE=-1V	3	-	-	MHz

\*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

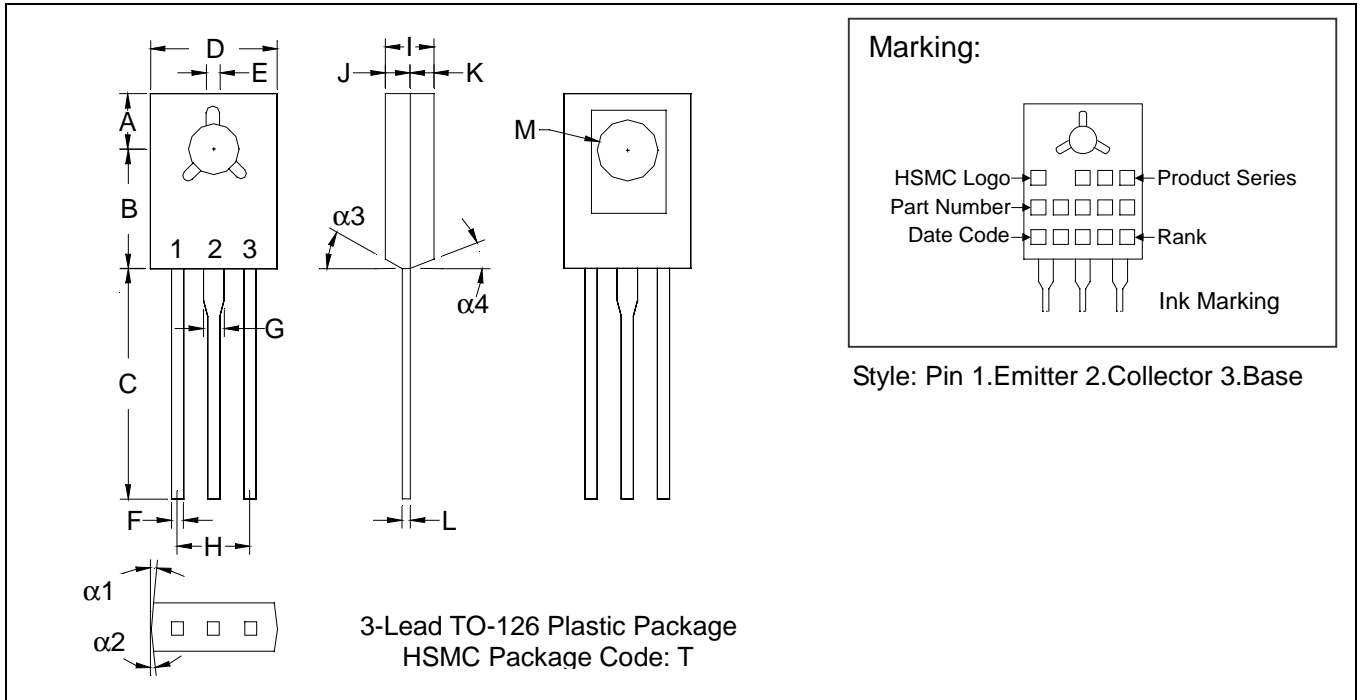


### Characteristics Curve





### TO-126 Dimension



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
$\alpha 1$	-	*3°	-	*3°	F	0.0280	0.0319	0.71	0.81
$\alpha 2$	-	*3°	-	*3°	G	0.0480	0.0520	1.22	1.32
$\alpha 3$	-	*3°	-	*3°	H	0.1709	0.1890	4.34	4.80
$\alpha 4$	-	*3°	-	*3°	I	0.0950	0.1050	2.41	2.66
A	0.1500	0.1539	3.81	3.91	J	0.0450	0.0550	1.14	1.39
B	0.2752	0.2791	6.99	7.09	K	0.0450	0.0550	1.14	1.39
C	0.5315	0.6102	13.50	15.50	L	-	*0.0217	-	*0.55
D	0.2854	0.3039	7.52	7.72	M	0.1378	0.1520	3.50	3.86
E	0.0374	0.0413	0.95	1.05					

- Notes: 1.Dimension and tolerance based on our Spec. dated Mar. 6,1995.  
 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

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of HSMC.
- HSMC reserves the right to make changes to its products without notice.
- **HSMC semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- HSMC assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

**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