

General Purpose NPN Epitaxial Planar Transistor

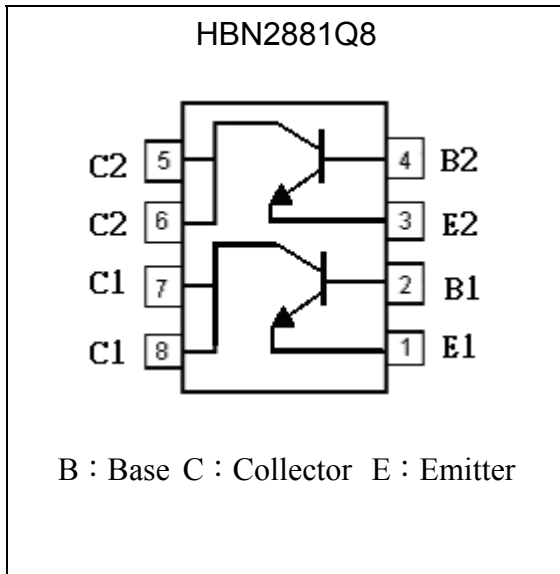
HBN2881Q8

BV_{CEO}	200V
I_C	1A
$R_{CESAT(MAX)}$	0.6Ω

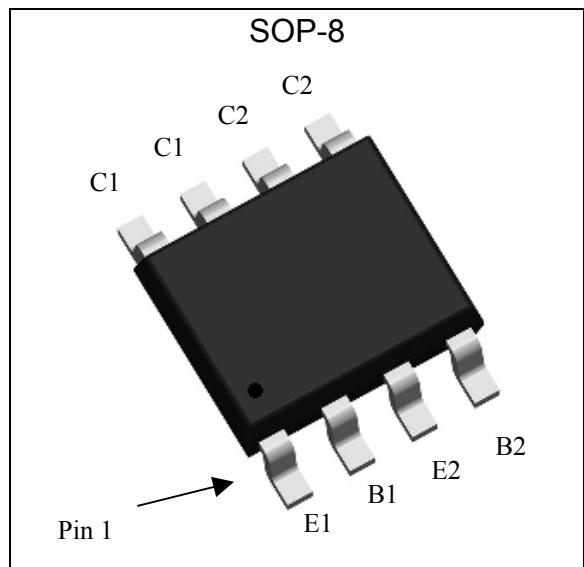
Features

- High breakdown voltage, $BV_{CEO} \geq 200V$
- Large continuous collector current capability
- Low collector saturation voltage
- Pb-free lead plating and halogen-free package

Equivalent Circuit

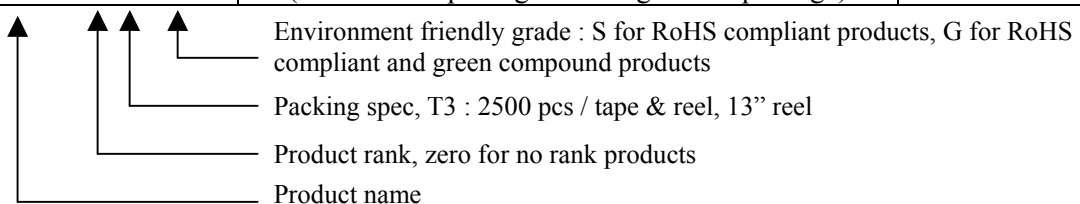


Outline



Ordering Information

Device	Package	Shipping
HBN2881Q8-0-T3-G	SOP-8 (Pb-free lead plating and halogen-free package)	2500 pcs / tape & reel





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	300	V
Collector-Emitter Voltage	V _{CEO}	200	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current	I _C	1	A
Pulsed Collector Current	I _{CP}	4 (Note 1)	A
Base Current	I _B	0.2	A
Power Dissipation for Dual Operation	PD	2	W
Power Dissipation for Single Operation		1.6 (Note 2)	W
		0.9 (Note 3)	W
Operating Junction Temperature Range	T _j	-55~+150	°C
Storage Temperature Range	T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	20	°C/W
Thermal Resistance, Junction-to-ambient, max, dual	R _{θJA}	62.5	
Thermal Resistance, Junction-to-ambient, max , single operation		78 (Note 2)	
		135 (Note 3)	

- Note : 1. Pulse width limited by maximum junction temperature
 2. Surface mounted on 1 in² copper pad of FR-4 board, pulse width≤10s.
 3. Surface mounted on minimum copper pad, pulse width≤10s.

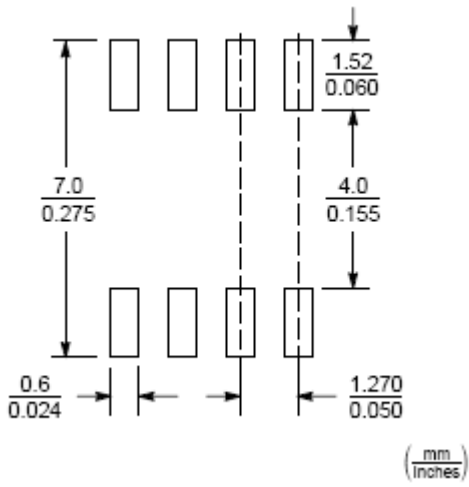
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	300	-	-	V	I _C =10μA
BV _{CEO}	200	-	-	V	I _C =10mA
BV _{EBO}	6	-	-	V	I _E =10μA
I _{CB0}	-	-	100	nA	V _{CB} =300V
I _{EBO}	-	-	100	nA	V _{EB} =6V
*V _{CE(sat)}	-	0.2	0.3	V	I _C =500mA, I _B =50mA
*V _{CE(sat)}	-	-	0.6	V	I _C =700mA, I _B =35mA
*V _{BE(sat)}	-	-	1	V	I _C =500mA, I _B =50mA
*V _{BE(on)}	-	-	1	V	V _{CE} =5V, I _C =500mA
*h _{FE} 1	120	-	-	-	V _{CE} =5V, I _C =50mA
*h _{FE} 2	160	-	320	-	V _{CE} =5V, I _C =100mA
*h _{FE} 3	30	-	-	-	V _{CE} =5V, I _C =700mA
f _T	-	120	-	MHz	V _{CE} =5V, I _C =100mA
Cob	-	-	20	pF	V _{CB} =10V, I _E =0A, f=1MHz

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

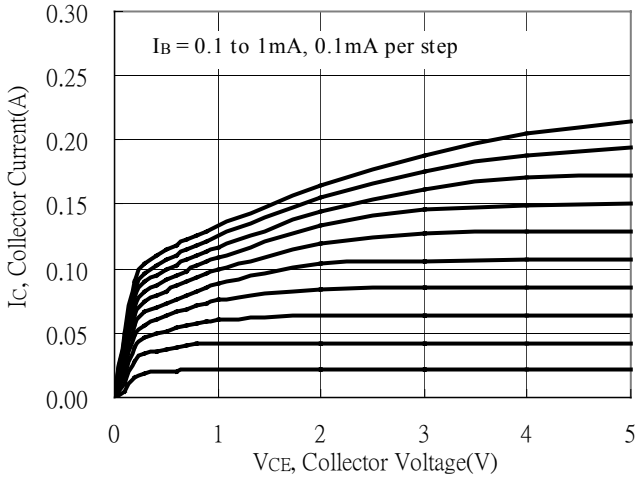


Recommended Soldering Footprint

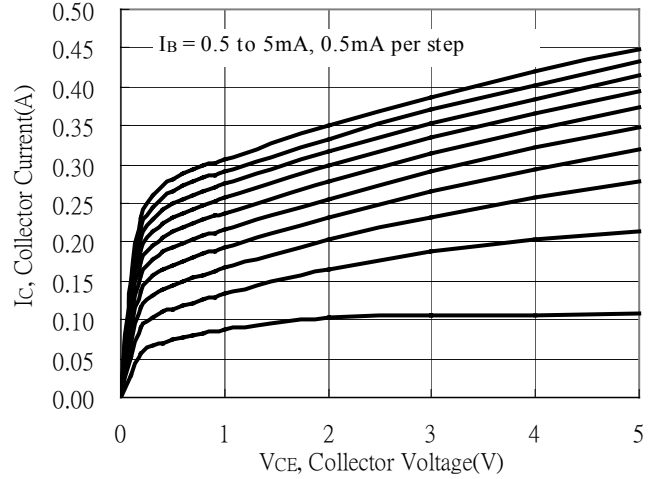


Typical Characteristics

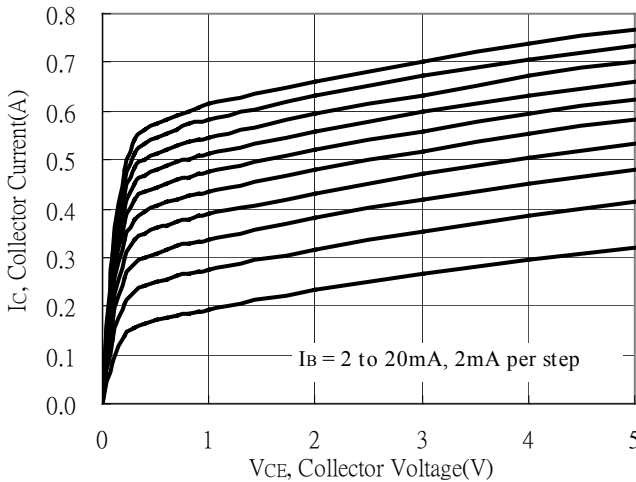
Output Characteristics



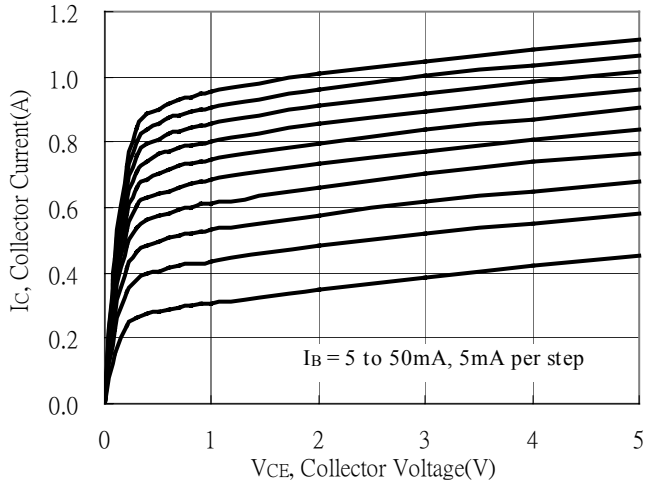
Output Characteristics



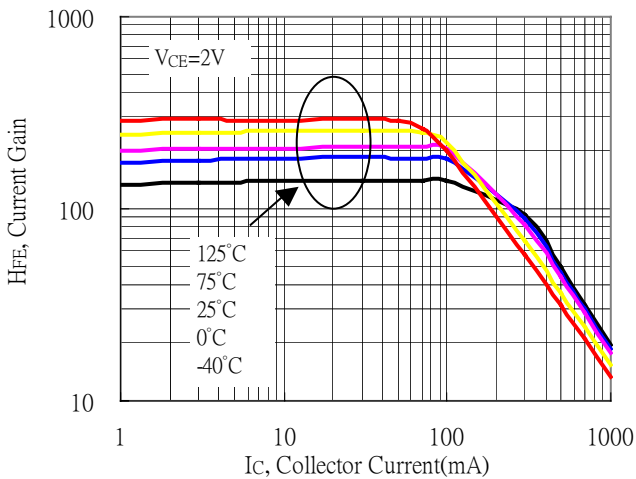
Output Characteristics



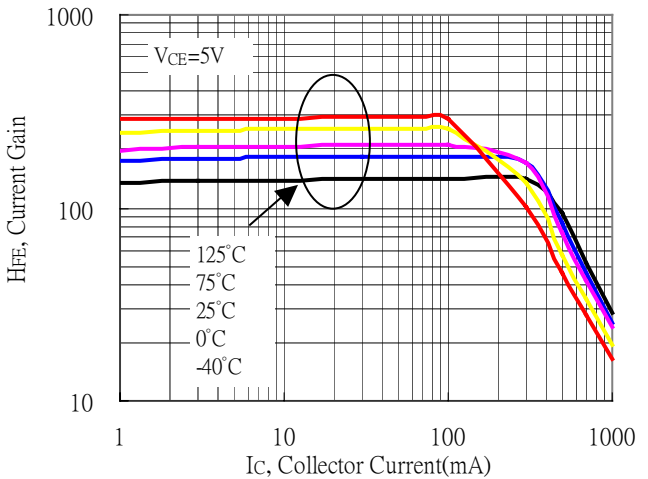
Output Characteristics



Current Gain vs Collector Current

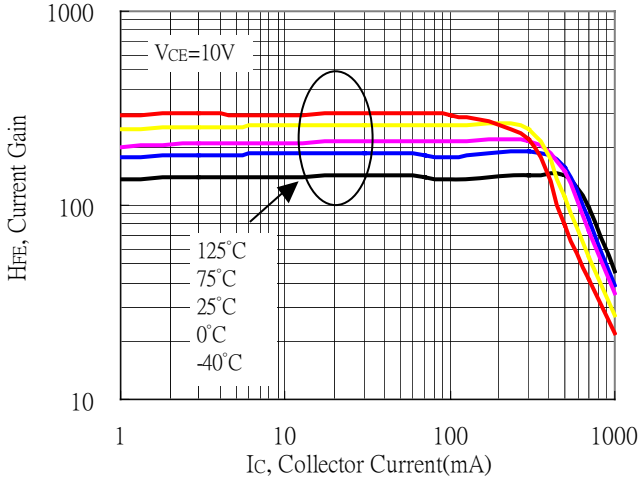


Current Gain vs Collector Current

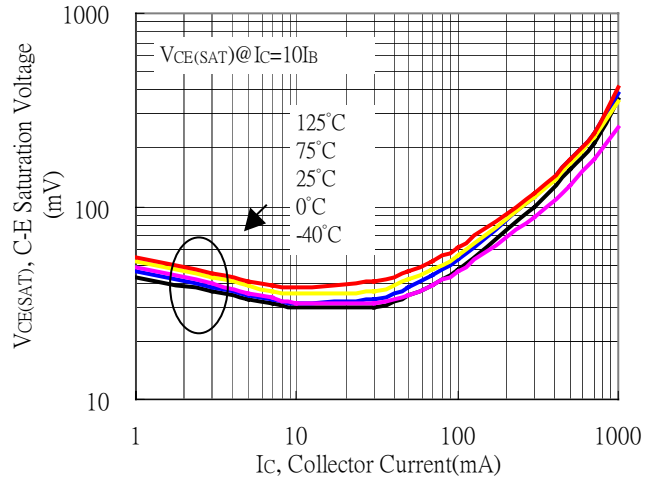


Typical Characteristics (Cont.)

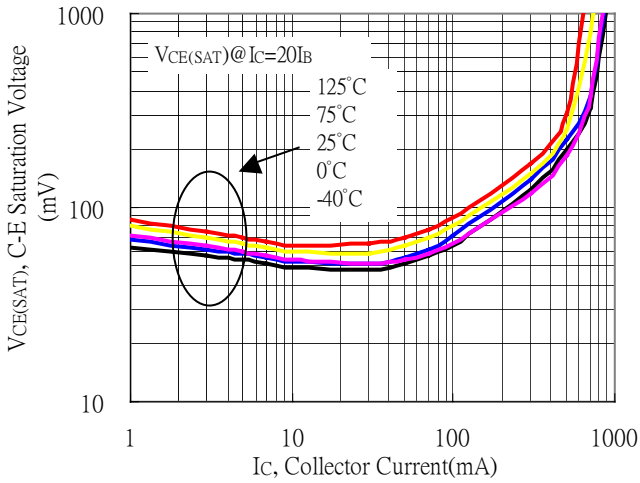
Current Gain vs Collector Current



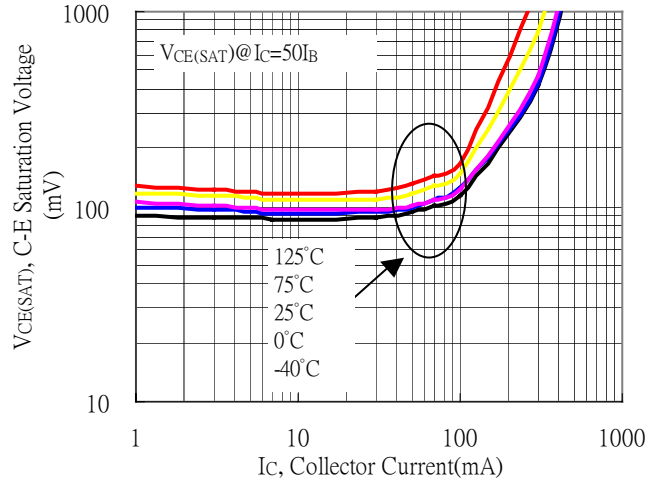
Saturation Voltage vs Collector Current



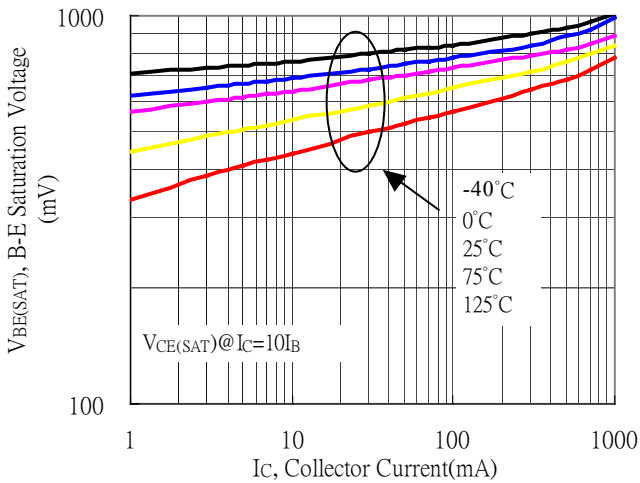
Saturation Voltage vs Collector Current



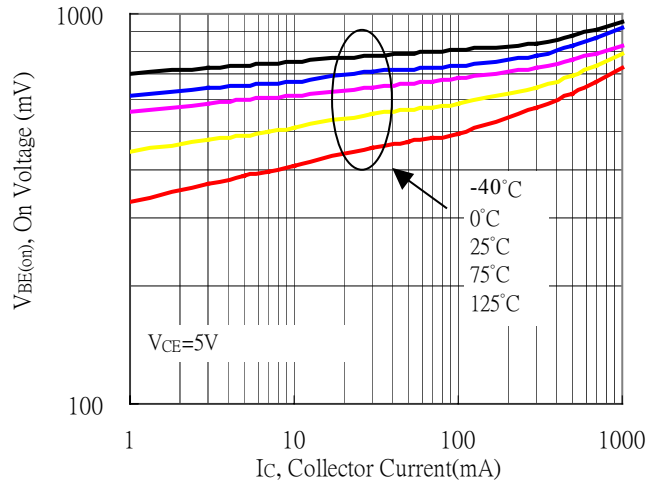
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

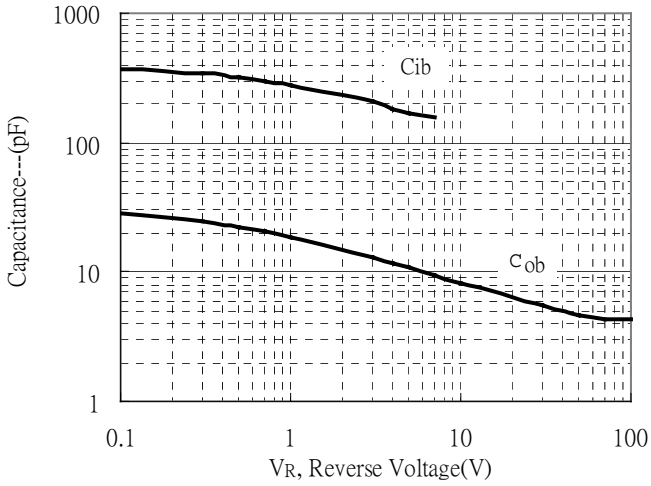


On Voltage vs Collector Current

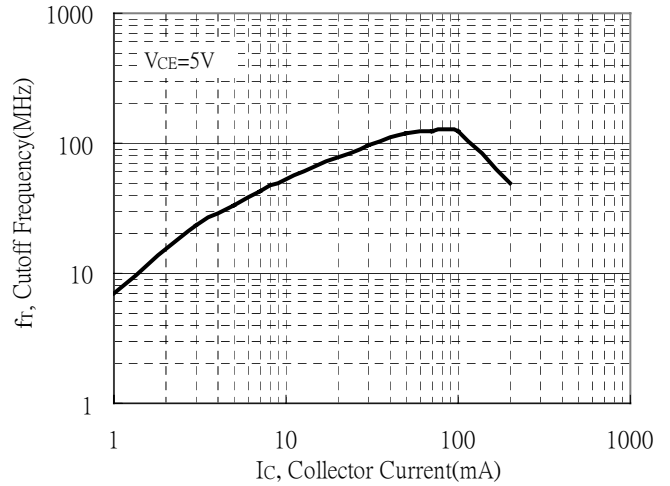


Typical Characteristics (Cont.)

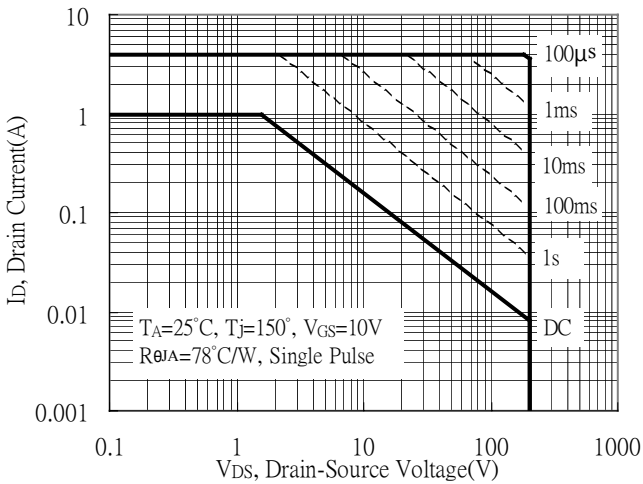
Capacitance vs Reverse Voltage



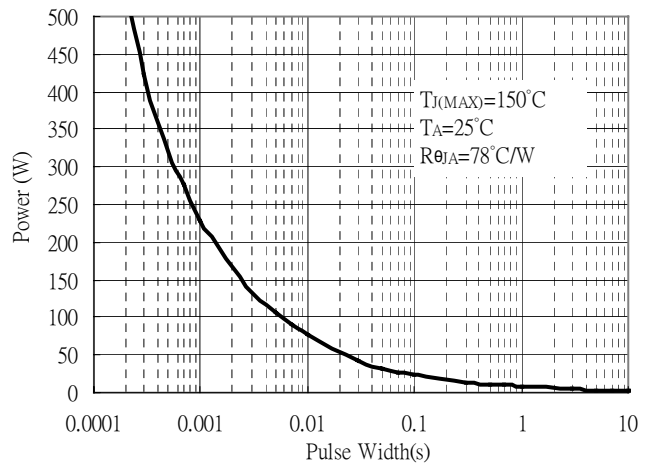
Capacitance vs Reverse Voltage



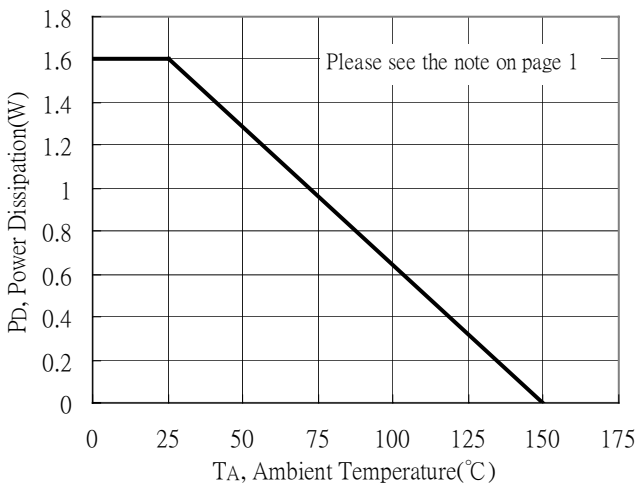
Maximum Safe Operating Area



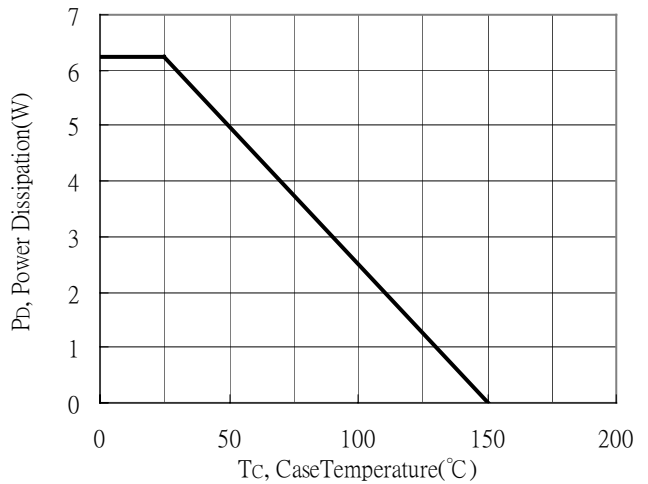
Single Pulse Maximum Power Dissipation
 (Please see Note on page 2)



Power Derating Curve

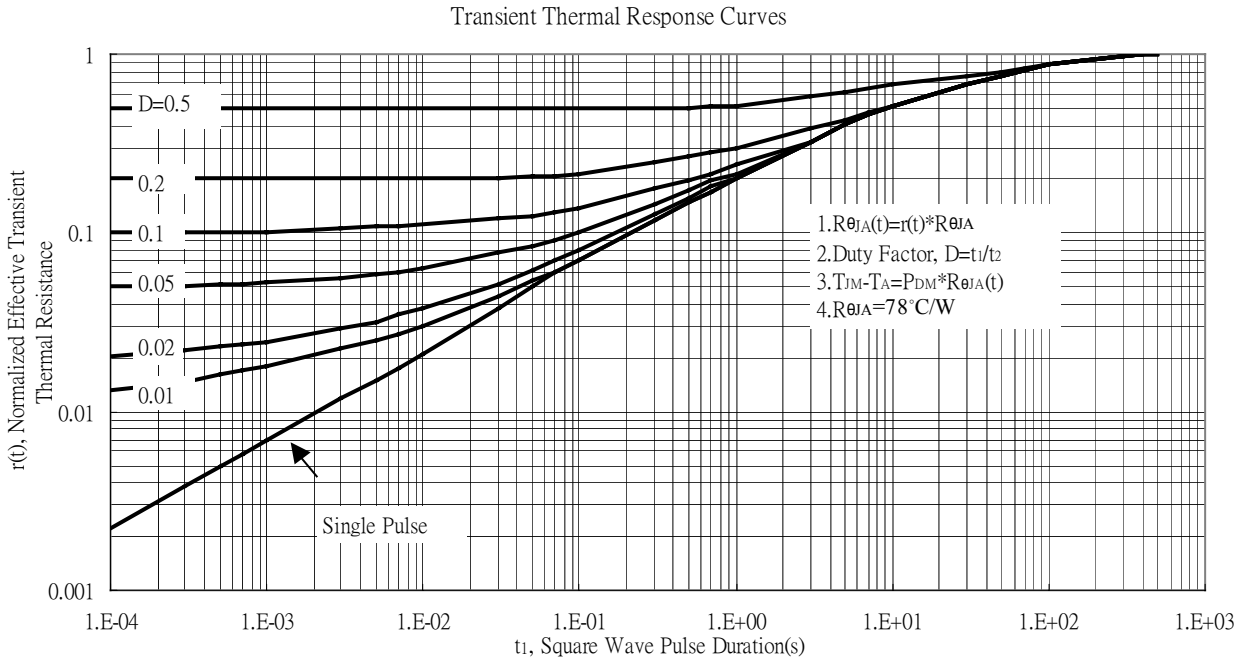


Power Derating Curve

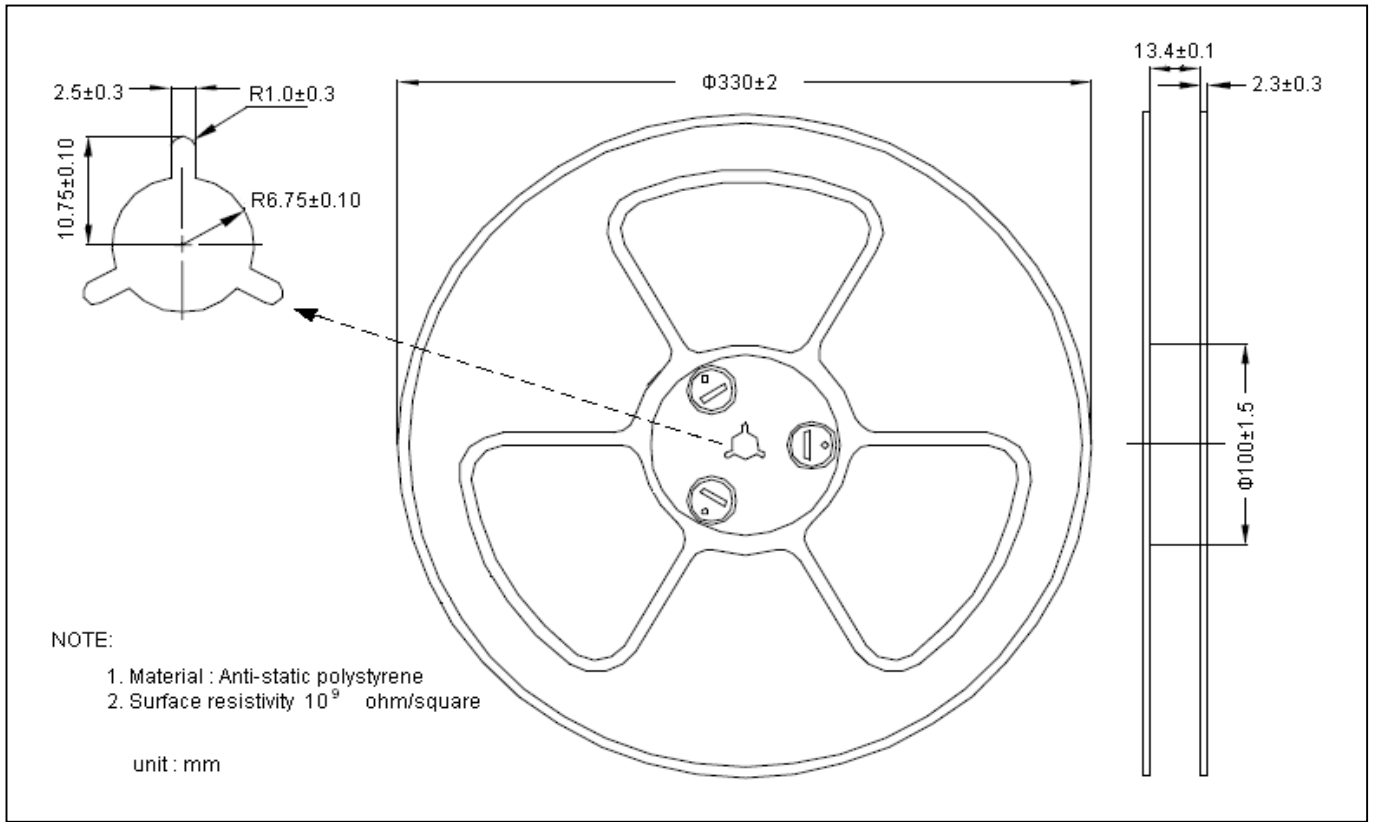




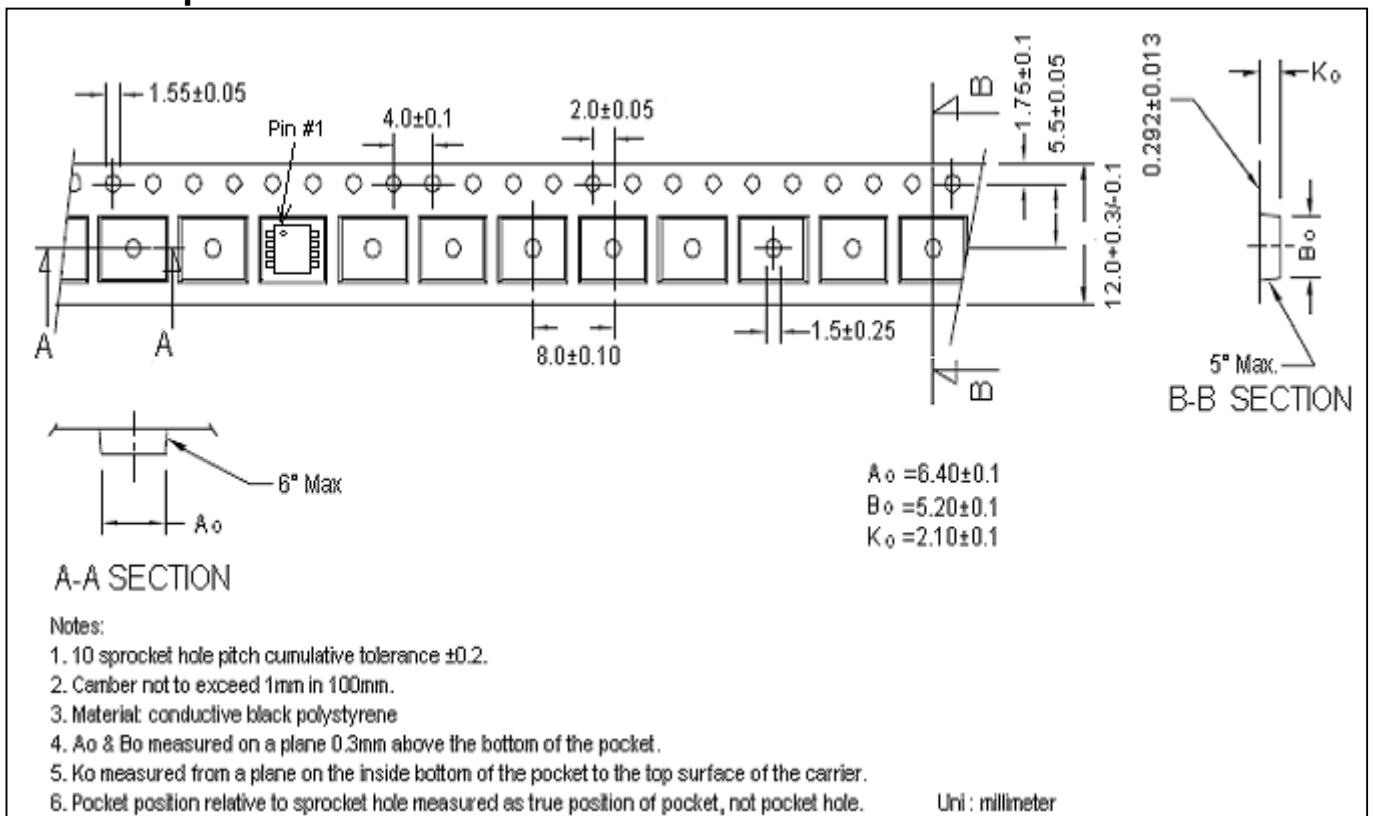
Typical Characteristics (Cont.)



Reel Dimension



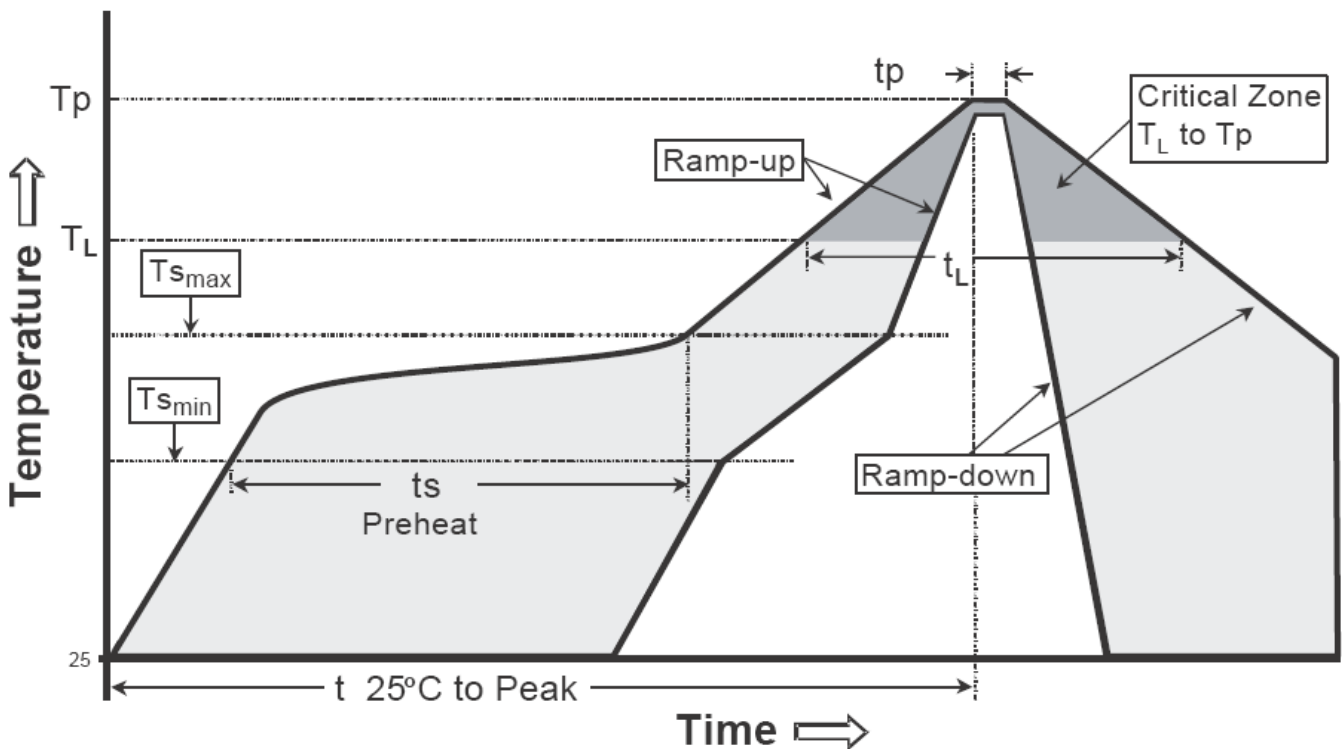
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

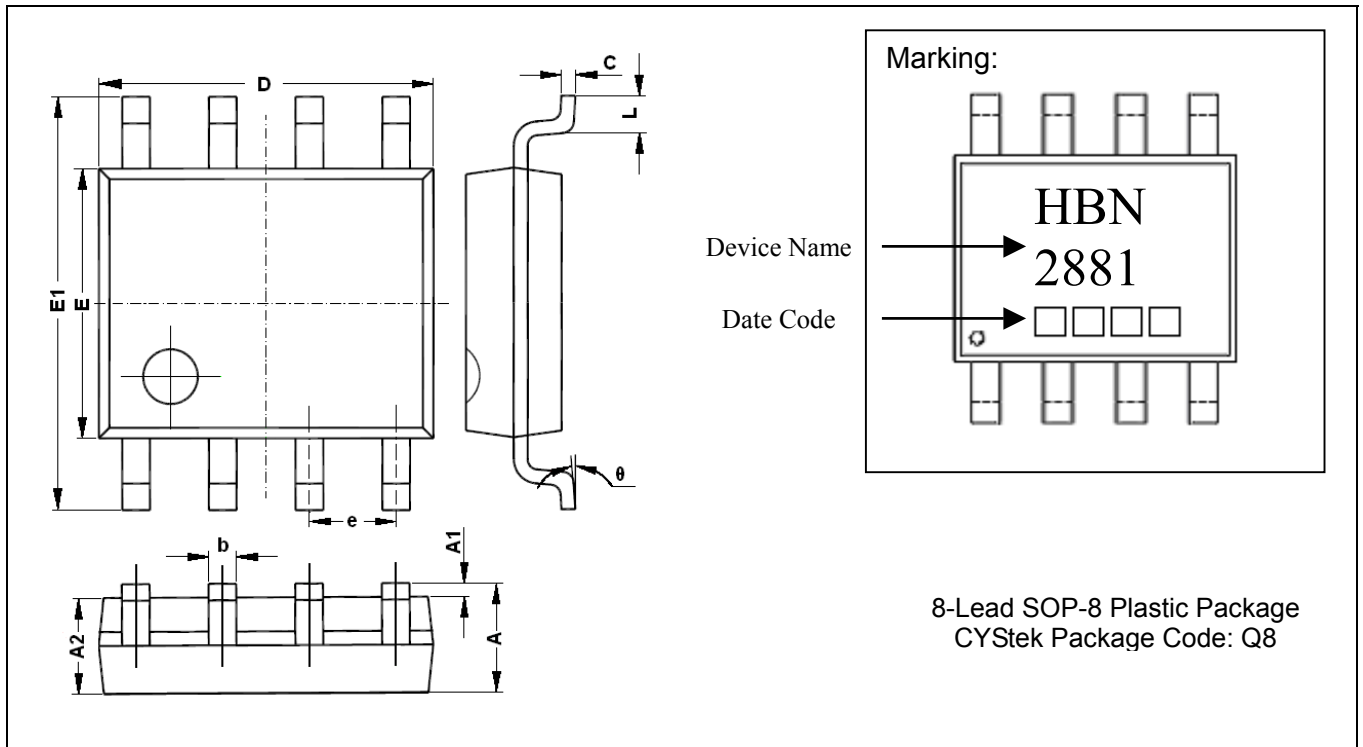
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOP-8 Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069	E	3.800	4.000	0.150	0.157
A1	0.100	0.250	0.004	0.010	E1	5.800	6.200	0.228	0.244
A2	1.350	1.550	0.053	0.061	e	1.270	(BSC)	0.050	(BSC)
b	0.330	0.510	0.013	0.020	L	0.400	1.270	0.016	0.050
c	0.170	0.250	0.006	0.010	θ	0	8°	0	8°
D	4.700	5.100	0.185	0.200					

Notes: 1.Controlling dimension: millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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