

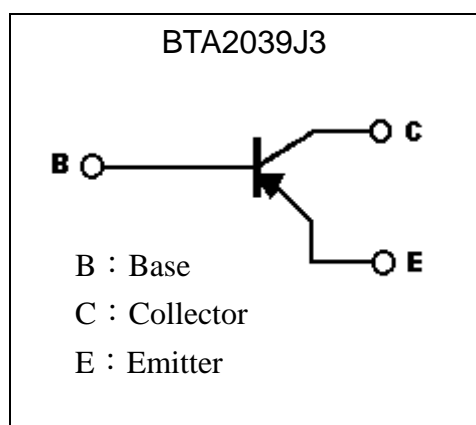
PNP Epitaxial Planar Silicon Transistor

BTA2039J3

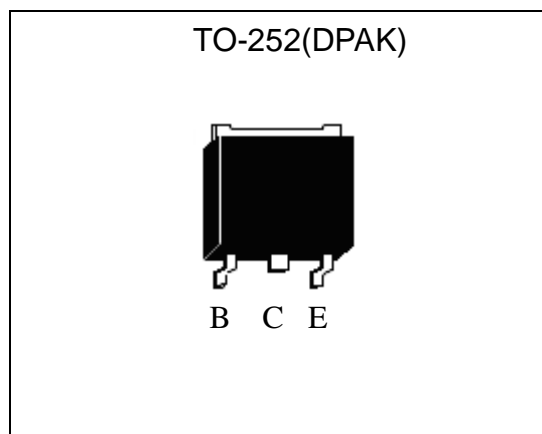
Features

- Large current capability
- Very low saturation voltage
- Low collector-to-emitter saturation voltage
- High speed switching
- Pb-free lead plating and halogen-free package

Symbol

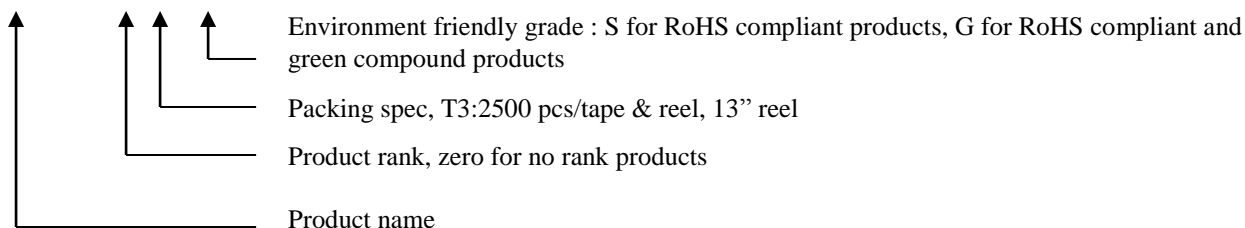


Outline



Ordering Information

Device	Package	Shipping
BTA2039J3-0-T3-G	TO-252 (RoHS compliant and halogen-free package)	2500 pcs / Tape & Reel





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	-60	V
Collector-Emitter Voltage	V _{CES}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EBO}	-6	V
Continuous Collector Current	I _C	-5	A
Peak Collector Current	I _{CP}	-7.5 (Note 1)	A
Base Current	I _B	-1.2	A
Power Dissipation	@T _A =25°C	0.8 (Note 2)	W
	@T _A =25°C	1.5 (Note 3)	W
	@T _C =25°C	15	W
Operating Junction and Storage Temperature Range	T _j ; T _{stg}	-55 ~ +150	°C

- Note : 1. Single Pulse , P_w ≤ 300μs, Duty ≤ 2%.
 2. When tested without any heatsink.
 3. When mounted on a PCB with the area of 1cm×1cm, 1oz copper.

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient	R _{θJA}	156	°C/W
		83.3 (Note 1)	
Thermal Resistance, Junction to Case	R _{θJC}	8.3	

Note : 1. When mounted on FR-4 PCB with area measuring 10×10 mm, 1oz copper

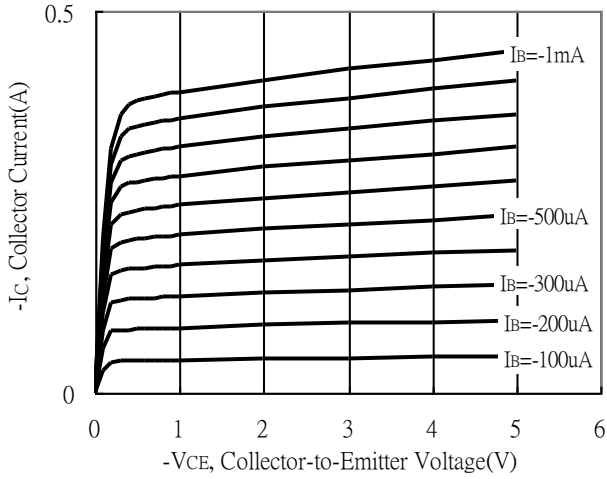
Characteristics (Ta=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	-60	-	-	V	I _C =-100μA
BV _{CES}	-60	-	-	V	I _C =-100μA, R _{BE} =0Ω
*BV _{CEO}	-60	-	-	V	I _C =-1mA
BV _{EBO}	-6	-	-	V	I _E =-10μA
IC _{B0}	-	-	-50	nA	V _{CB} =-60V
IE _{B0}	-	-	-50	nA	V _{EB} =-6V
*V _{CE(sat)1}	-50	-	-150	mV	I _C =-1A, I _B =-50mA
*V _{CE(sat)2}	-80	-	-250	mV	I _C =-2A, I _B =-100mA
*V _{CE(sat)3}	-100	-	-300	mV	I _C =-1A, I _B =-10mA
*V _{BE(sat)}	-0.6	-	-1.2	V	I _C =-2A, I _B =-100mA
h _{FE1}	200	-	560	-	V _{CE} =-2V, I _C =-500mA
h _{FE2}	50	-	-	-	V _{CE} =-2V, I _C =-1.5A
f _T	-	150	-	MHz	V _{CE} =-10V, I _C =-500mA, f=50MHz
C _{ob}	-	42	-	pF	V _{CB} =-10V, f=1MHz
ton	-	30	-	ns	I _C =-1A, I _{B1} =-100mA, I _{B2} =100mA, V _{CC} =-25V
tstg	-	230	-	ns	
tf	-	15	-	ns	

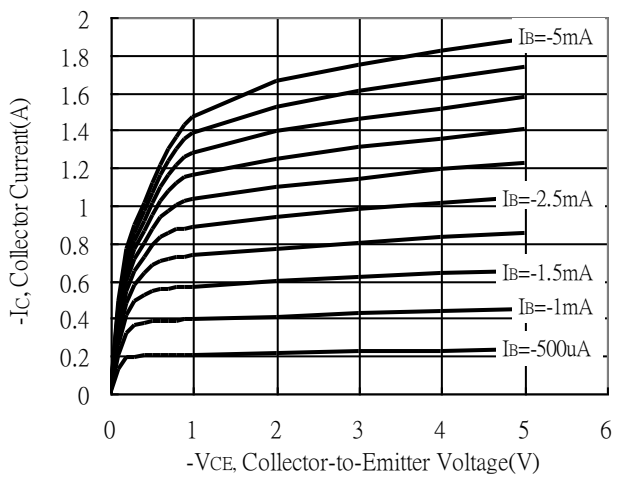
*Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%

Typical Characteristics

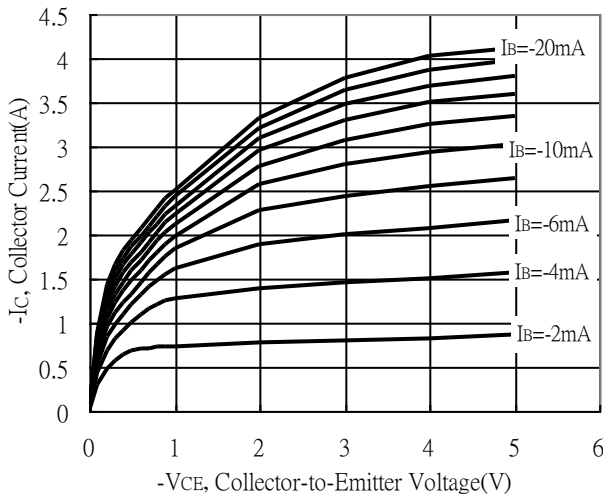
Emitter Grounded Output Characteristics



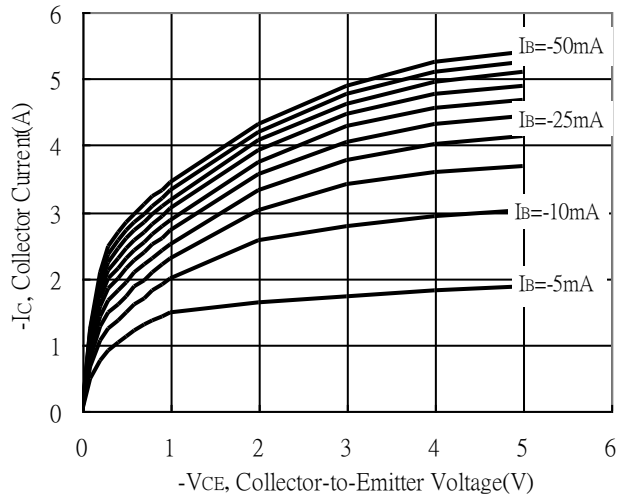
Emitter Grounded Output Characteristics



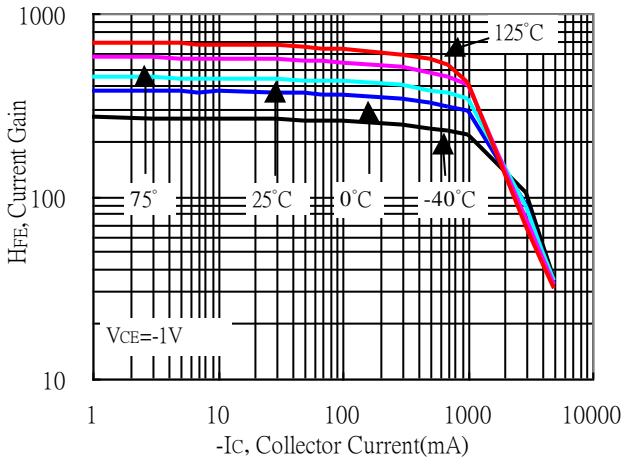
Emitter Grounded Output Characteristics



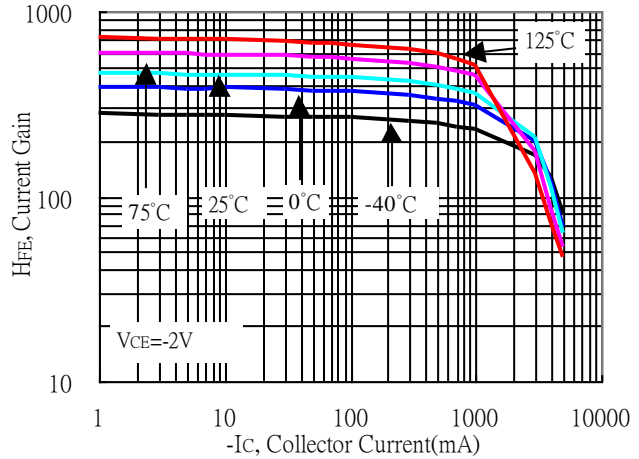
Emitter Grounded Output Characteristics



Current Gain vs Collector Current



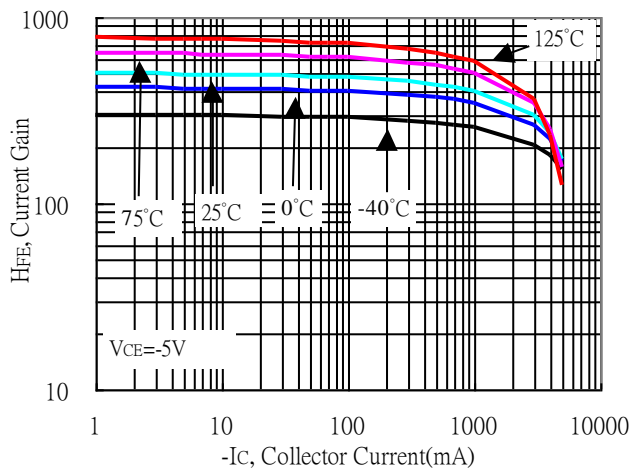
Current Gain vs Collector Current



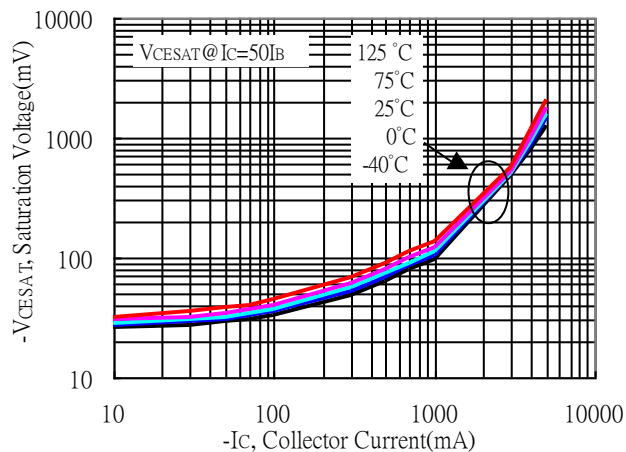


Typical Characteristics(Cont.)

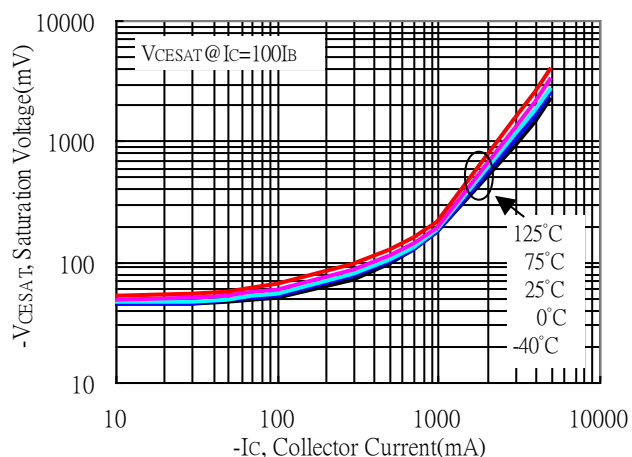
Current Gain vs Collector Current



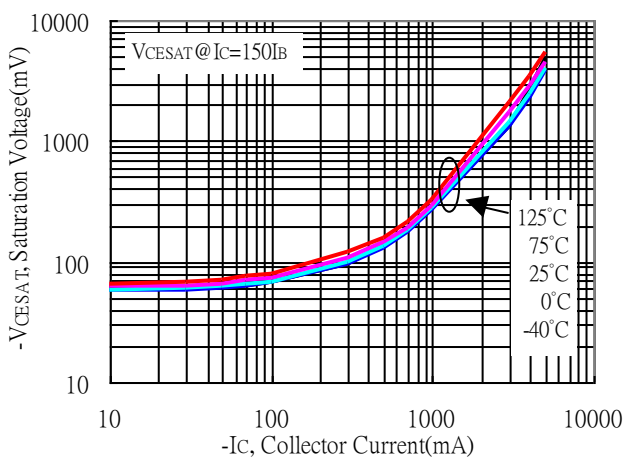
Saturation Voltage vs Collector Current



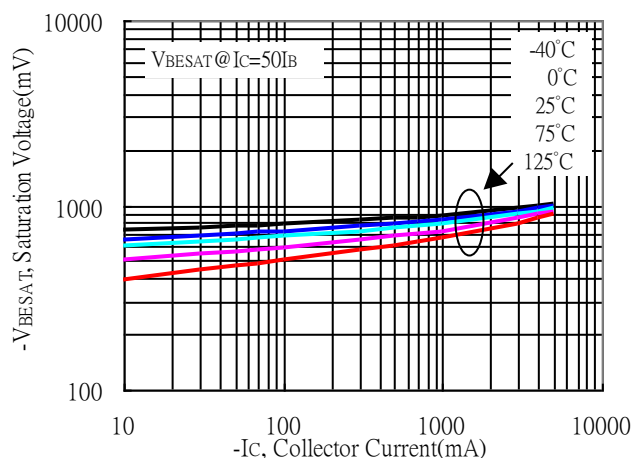
Saturation Voltage vs Collector Current



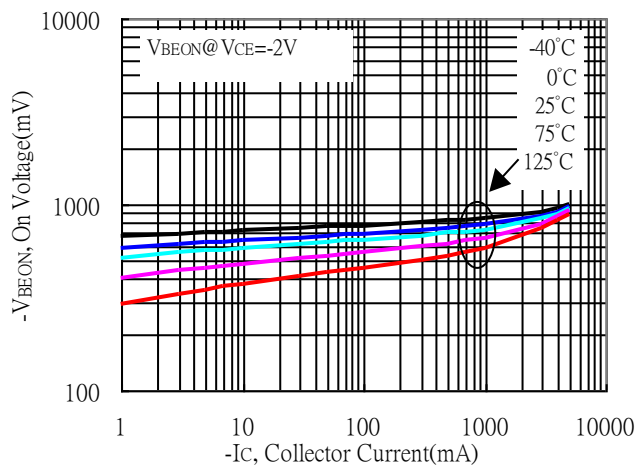
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

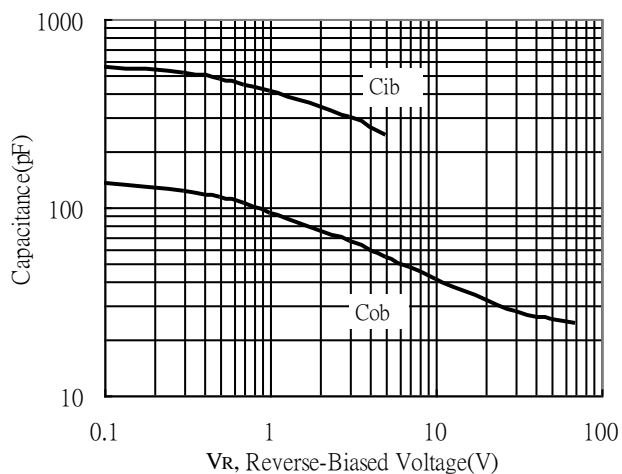


On Voltage vs Collector Current

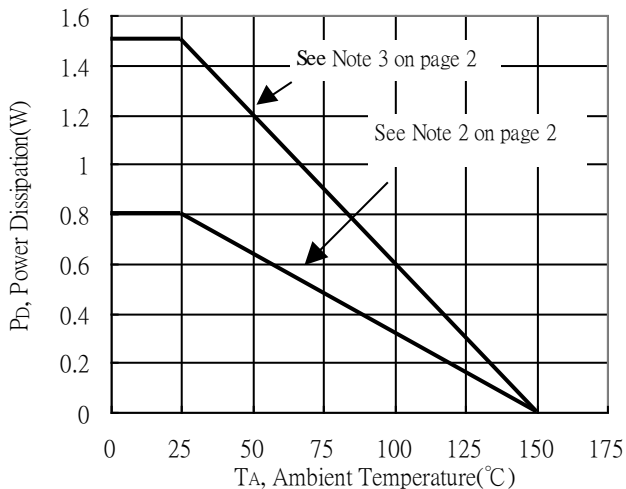


Typical Characteristics(Cont.)

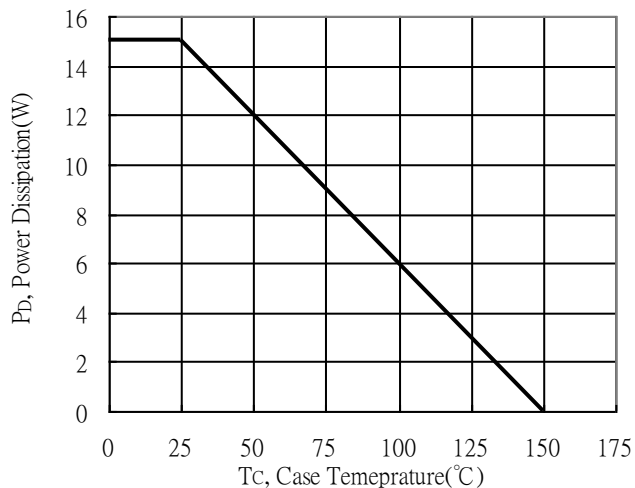
Capacitance vs Reverse-Biased Voltage



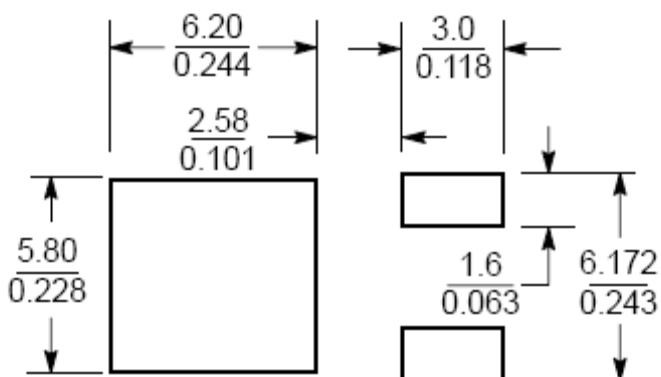
Power Derating Curves



Power Derating Curve

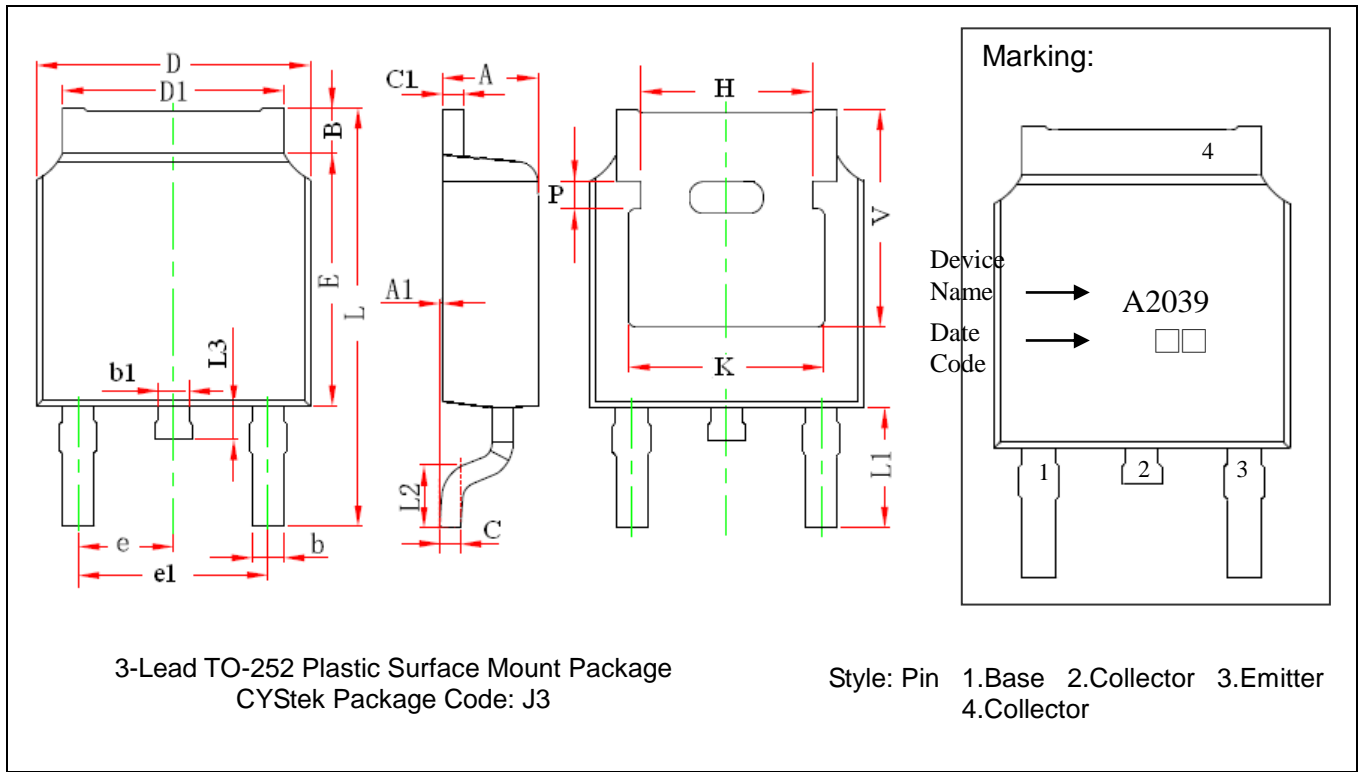


Recommended soldering footprint



Unit ($\frac{\text{mm}}{\text{inch}}$)

TO-252 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	0.086	0.094	2.186	2.386
A1	0.000	0.005	0.000	0.127	e1	0.172	0.188	4.372	4.772
B	0.039	0.048	0.990	1.210	H	0.163	REF	4.140	REF
b	0.026	0.034	0.660	0.860	K	0.190	REF	4.830	REF
b1	0.026	0.034	0.660	0.860	L	0.386	0.409	9.800	10.400
C	0.018	0.023	0.460	0.580	L1	0.114	REF	2.900	REF
C1	0.018	0.023	0.460	0.580	L2	0.055	0.067	1.400	1.700
D	0.256	0.264	6.500	6.700	L3	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	P	0.026	REF	0.650	REF
E	0.236	0.244	6.000	6.200	V	0.211	REF	5.350	REF

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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