



2SA2125/2SC5964

Bipolar Transistor (-50V, (-)3A, Low $V_{CE(sat)}$, (PNP)NPN Single PCP

ON Semiconductor®

<http://onsemi.com>

Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of MBIT process
- Low collector to emitter saturation voltage
- Halogen free compliance
- Large current capacity
- High-speed switching

Specifications () : 2SA2125

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector to Base Voltage	V_{CBO}		(-50)100	V
Collector to Emitter Voltage	V_{CES}		(-50)100	V
	V_{CEO}		(-50)	V
Emitter to Base Voltage	V_{EBO}		(-6)	V

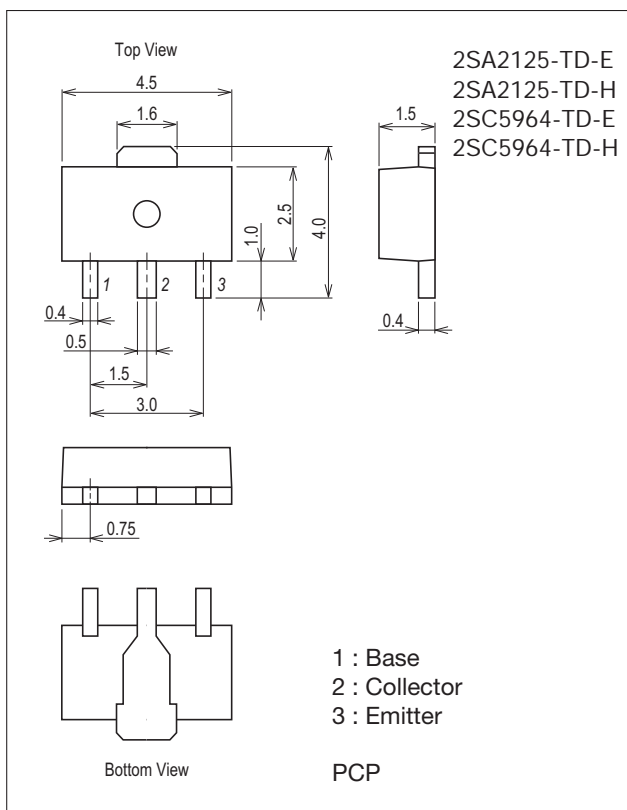
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Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

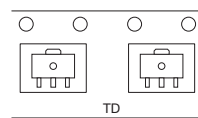
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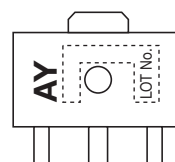
Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

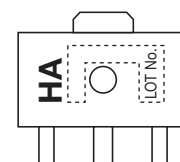
Packing Type: TD



Marking

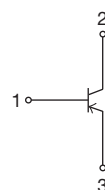


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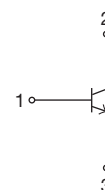


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Electrical Connection



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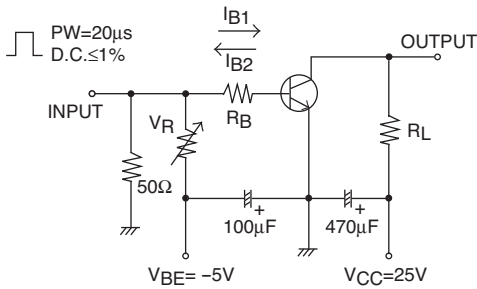
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Parameter	Symbol	Conditions	Ratings	Unit
Collector Current	I_C		(-) 3	A
Collector Current (Pulse)	I_{CP}		(-) 6	A
Base Current	I_B		(-) 600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (250mm ² ×0.8mm)	1.3	W
		$T_c=25^\circ\text{C}$	3.5	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to $+150$	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-40\text{V}, I_E=0\text{A}$			(-) 1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0\text{A}$			(-) 1	μA
DC Current Gain	h_{FE}	$V_{CE}=-2\text{V}, I_C=-100\text{mA}$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE}=-10\text{V}, I_C=-500\text{mA}$		(390)380		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, f=1\text{MHz}$		(24)13		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=-1\text{A}, I_B=-50\text{mA}$		(-125)100	(-230)150	mV
	$V_{CE(sat)2}$	$I_C=-2\text{A}, I_B=-100\text{mA}$		(-250)190	(-500)290	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-2\text{A}, I_B=-100\text{mA}$		(-) 0.94	(-) 1.2	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0\text{A}$	(-) 50	100		V
Collector to Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=-100\mu\text{A}, R_{BE}=0\Omega$	(-) 50	100		V
	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	(-) 50			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0\text{A}$	(-) 6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(30)35		ns
Storage Time	t_{stg}			(230)300		ns
Fall Time	t_f			(18)25		ns

Switching Time Test Circuit



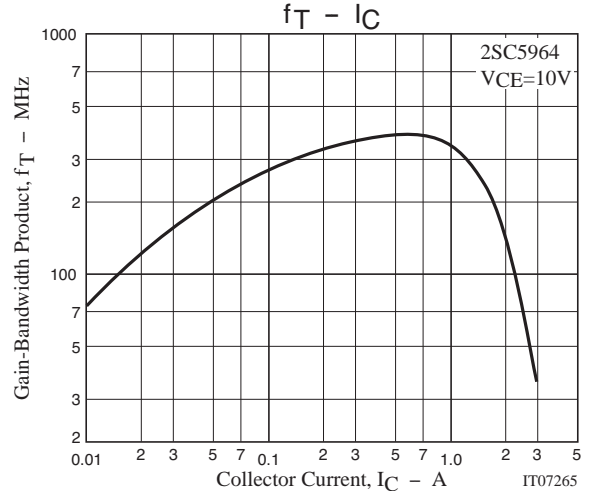
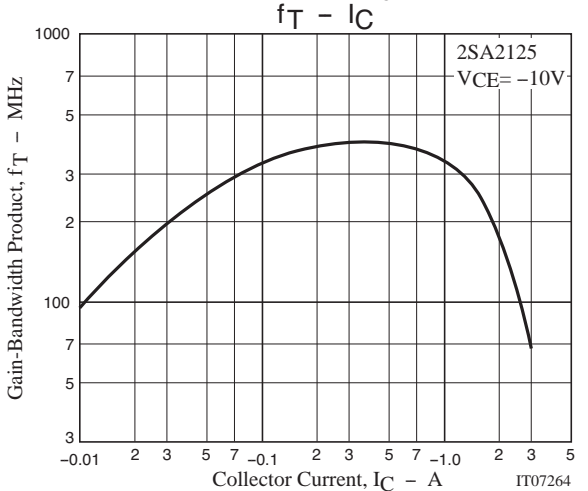
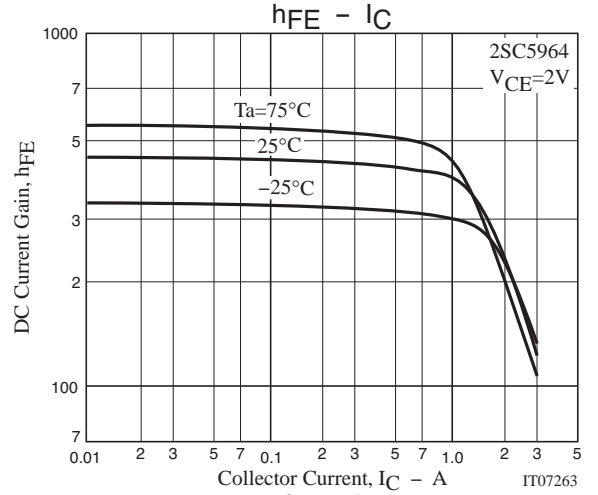
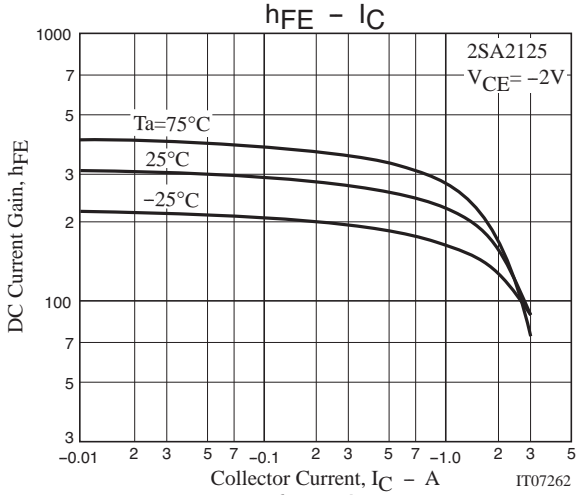
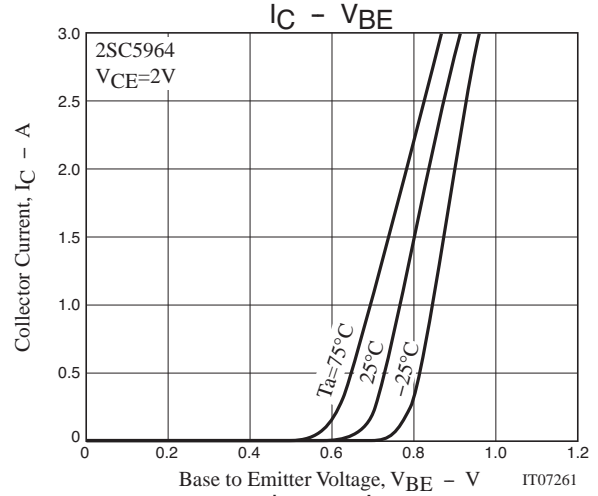
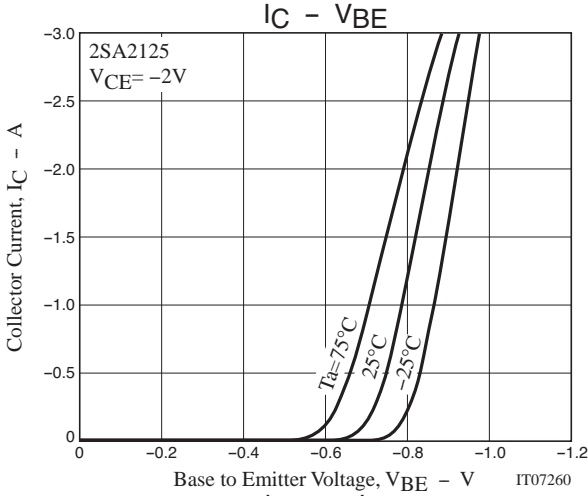
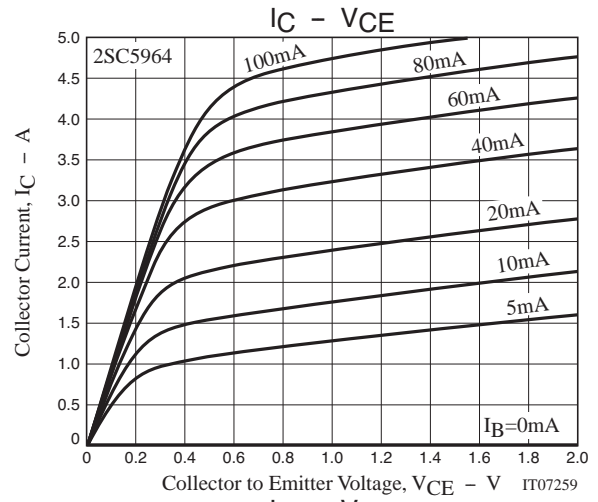
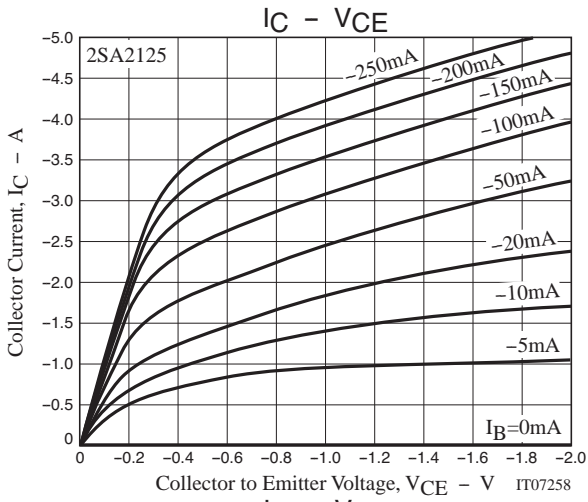
$$I_C = 10I_{B1} = -10I_{B2} = 1\text{A}$$

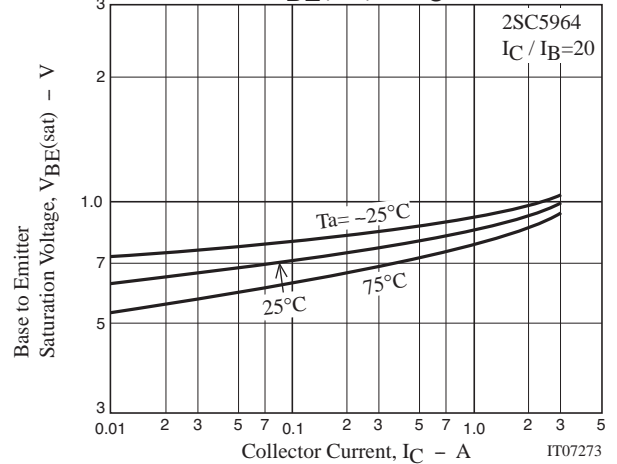
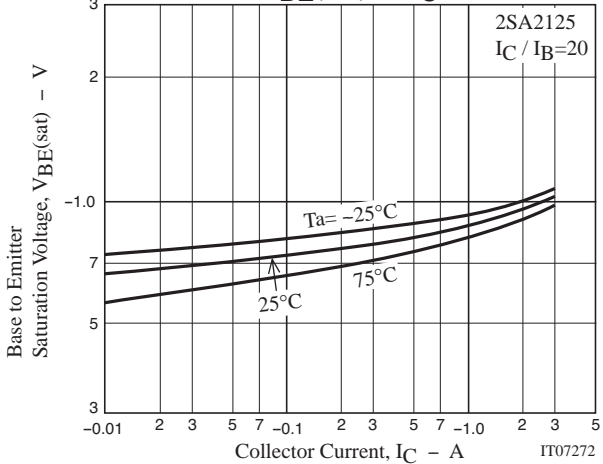
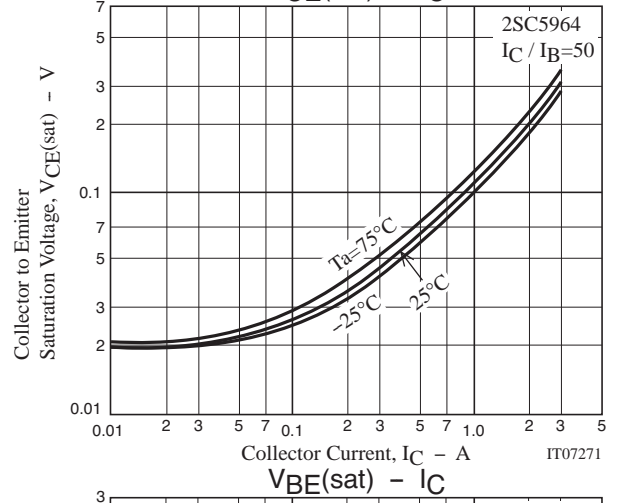
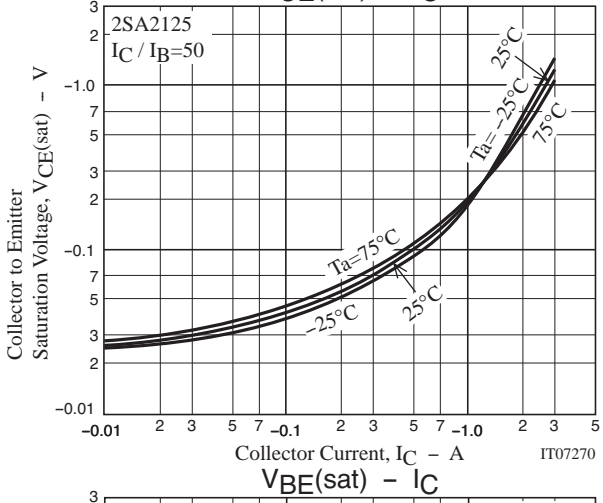
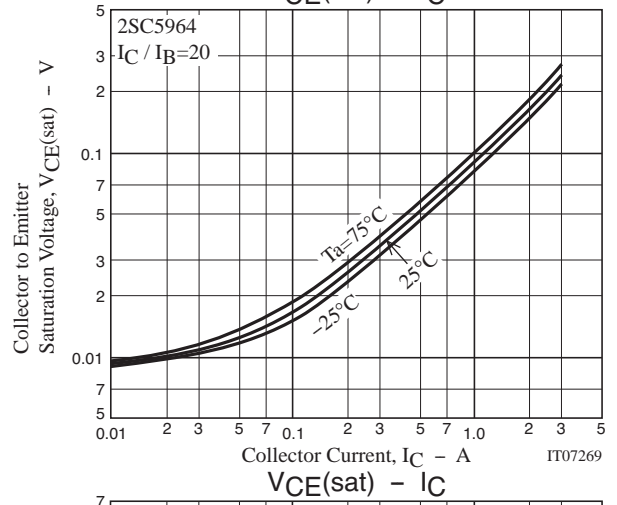
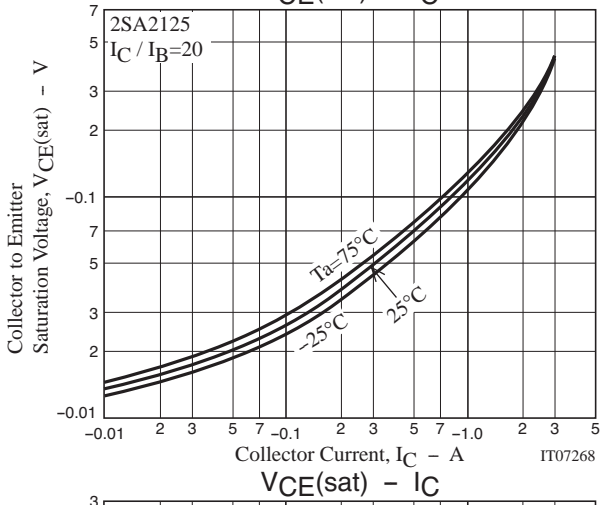
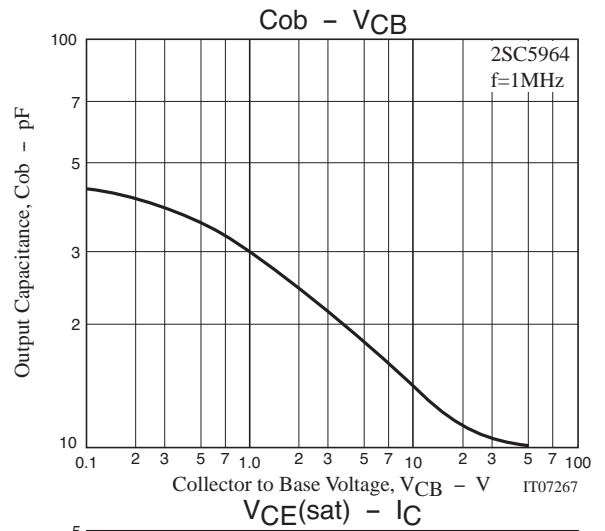
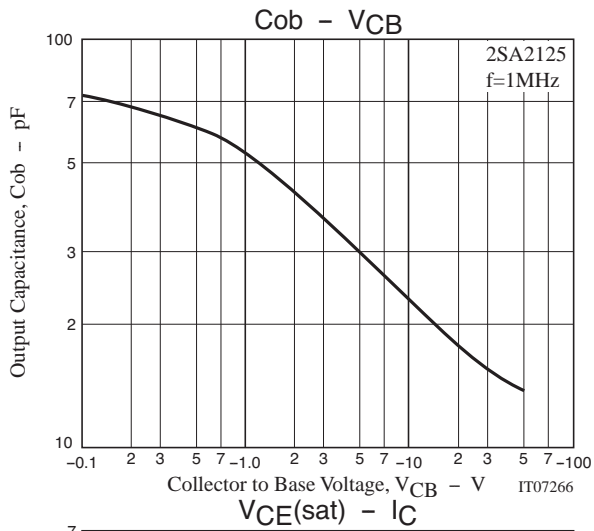
For PNP, the polarity is reversed.

Ordering Information

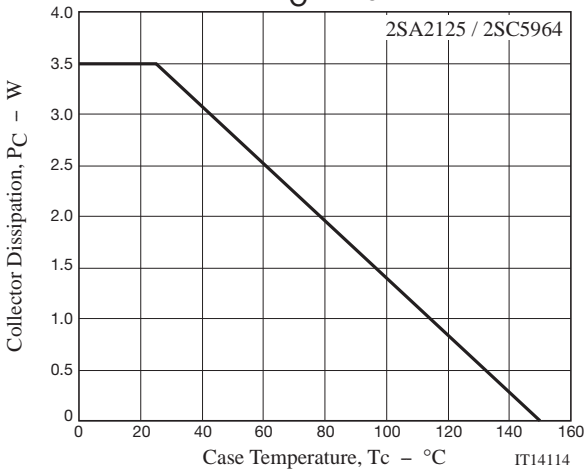
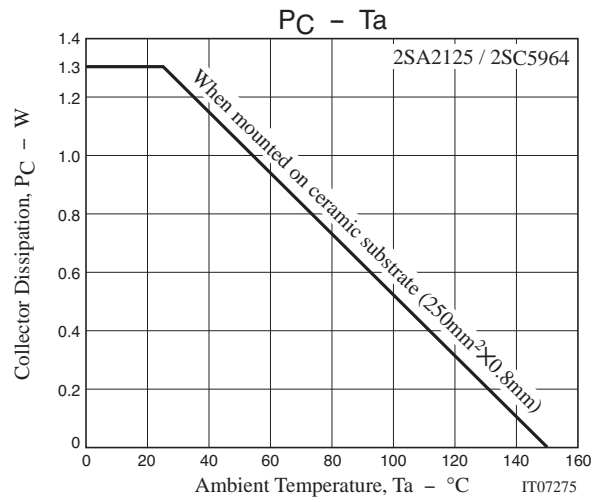
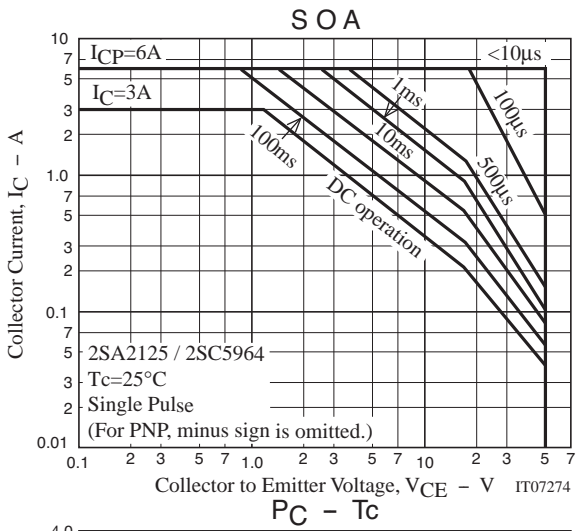
Device	Package	Shipping	memo
2SA2125-TD-E	PCP	1,000pcs./reel	Pb Free
2SA2125-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free
2SC5964-TD-E	PCP	1,000pcs./reel	Pb Free
2SC5964-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free

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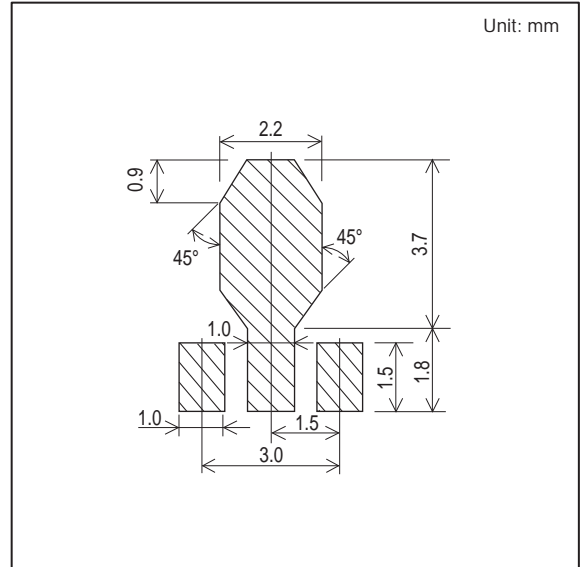
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Outline Drawing

2SA2125-TD-E, 2SA2125-TD-H, 2SC5964-TD-E, 2SC5964-TD-H



Land Pattern Example



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