



# 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

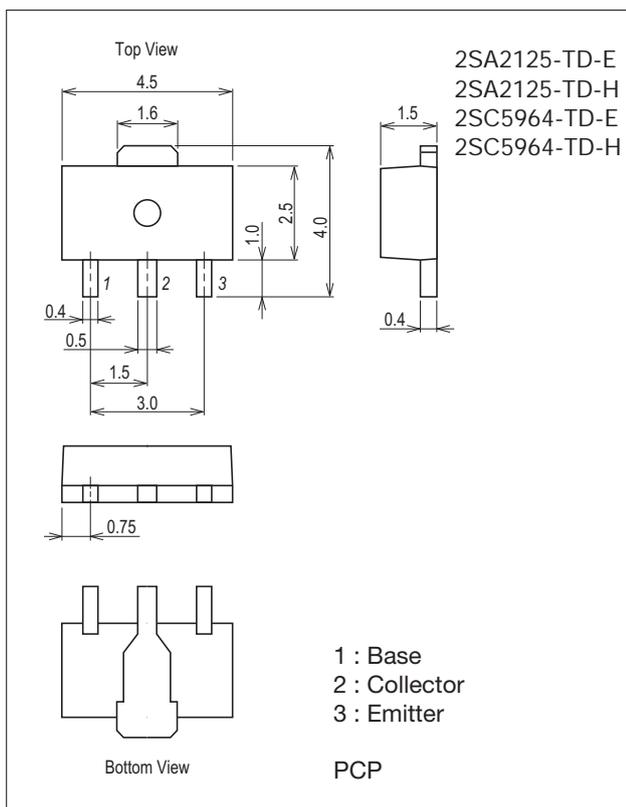
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Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions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

### Package Dimensions

unit : mm (typ)

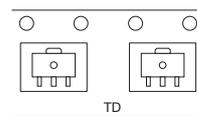
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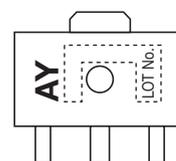
### Product & Package Information

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

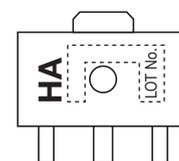
### Packing Type: TD



### Marking

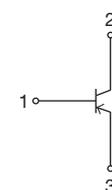


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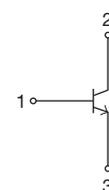


2SC5964

### Electrical Connection



2SA2125



2SC5964

## 2SA2125/2SC5964

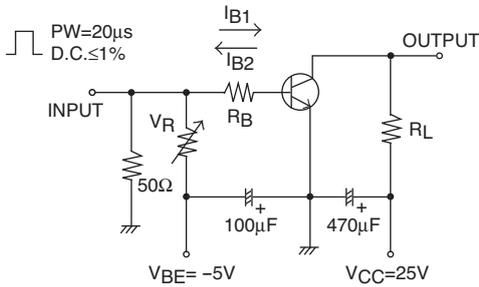
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Parameter	Symbol	Conditions	Ratings	Unit
Collector Current	$I_C$		(-) $3$	A
Collector Current (Pulse)	$I_{CP}$		(-) $6$	A
Base Current	$I_B$		(-) $600$	mA
Collector Dissipation	$P_C$	When mounted on ceramic substrate (250mm <sup>2</sup> ×0.8mm)	$1.3$	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	$I_{CBO}$	$V_{CB}=-40\text{V}, I_E=0\text{A}$			(-) $1$	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0\text{A}$			(-) $1$	$\mu\text{A}$
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



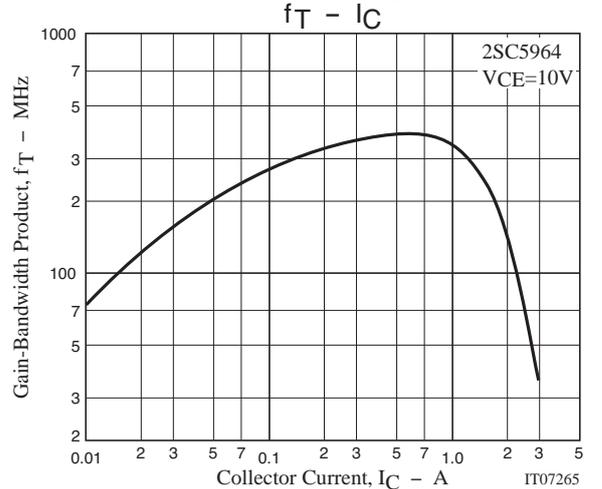
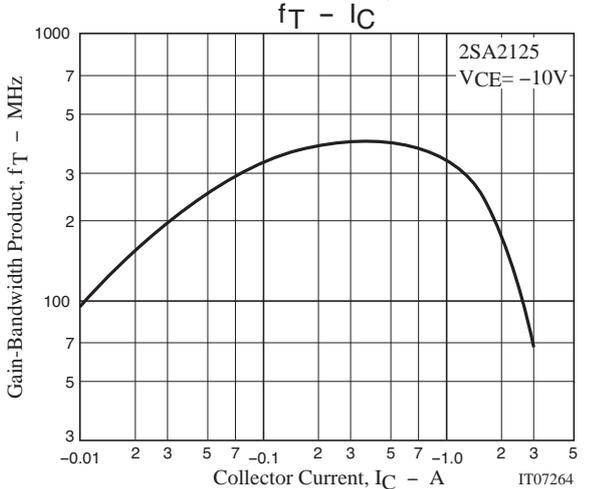
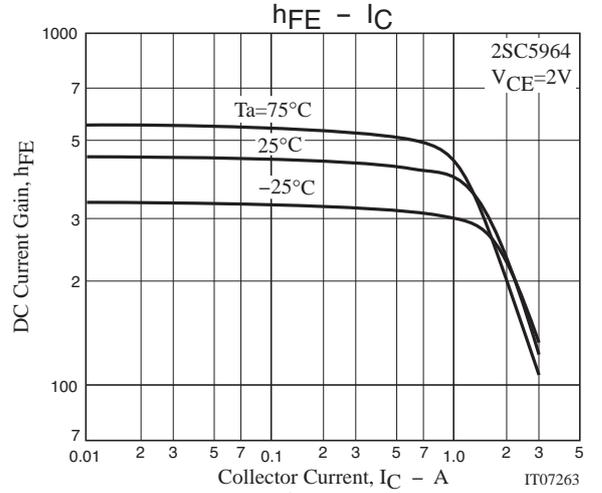
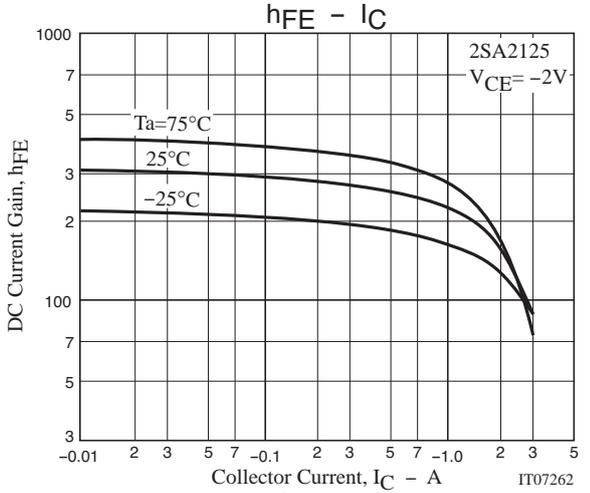
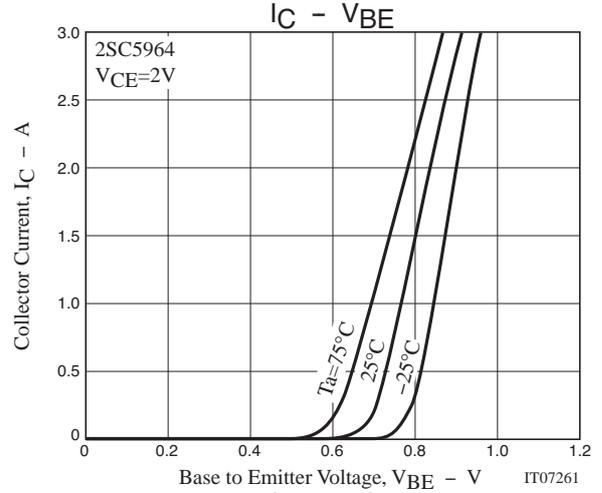
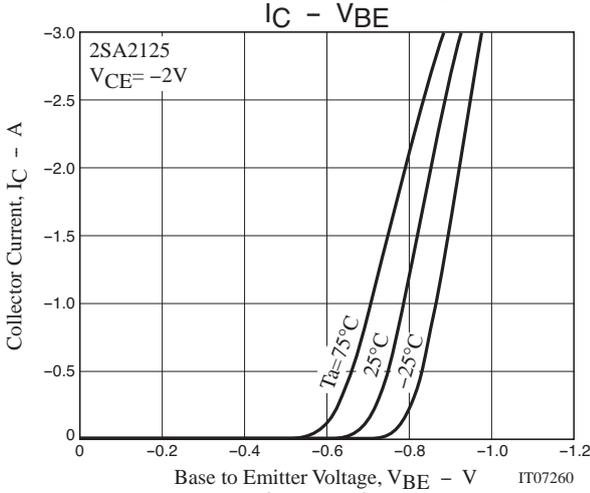
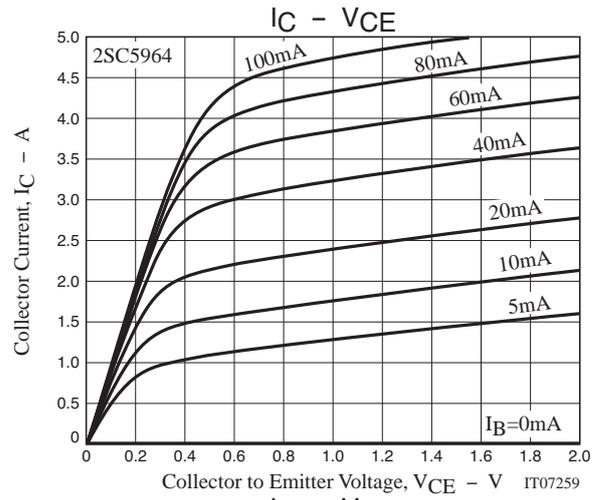
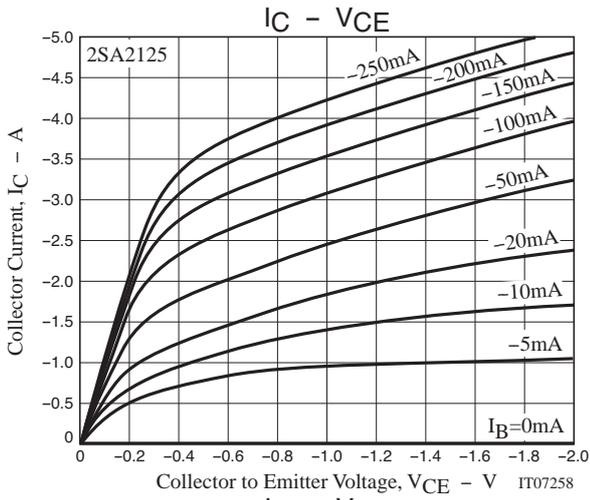
$$I_C = 10I_{B1} = -10I_{B2} = 1\text{A}$$

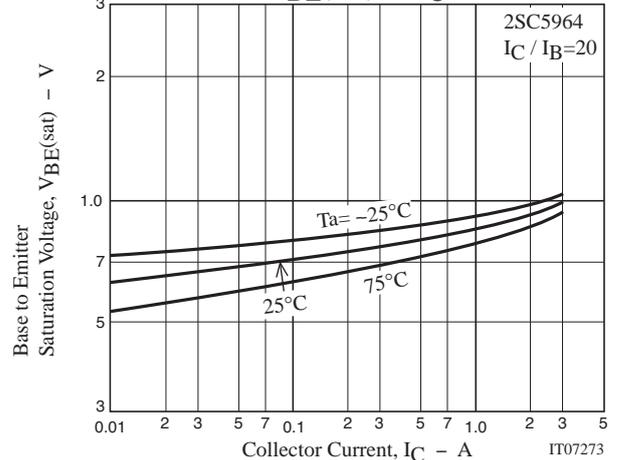
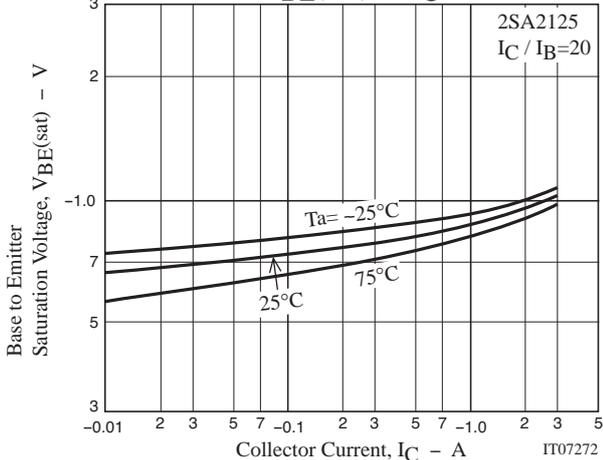
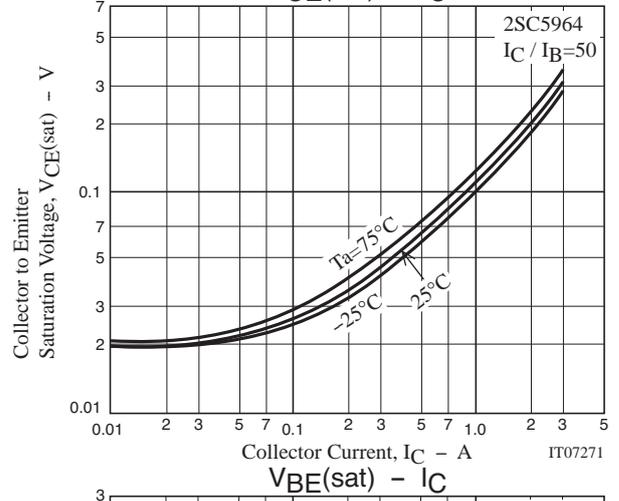
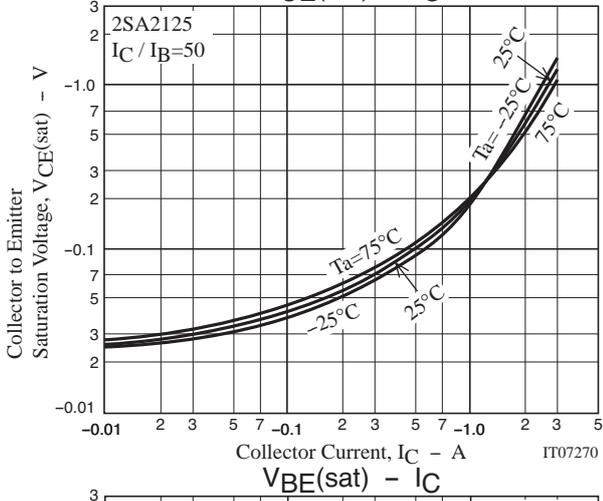
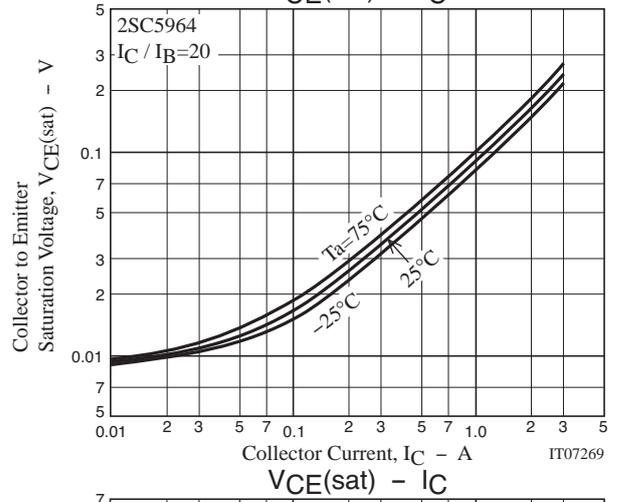
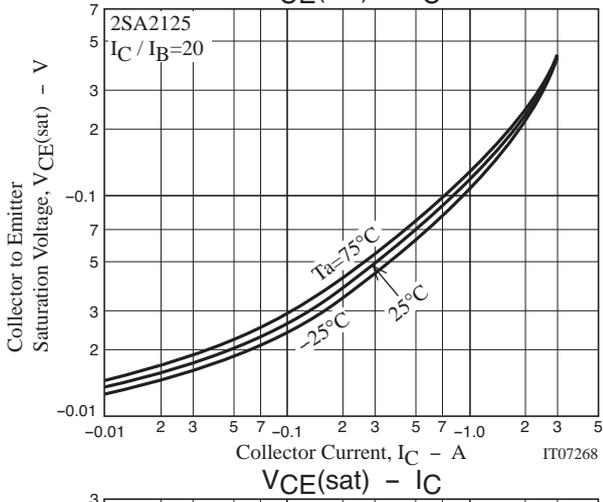
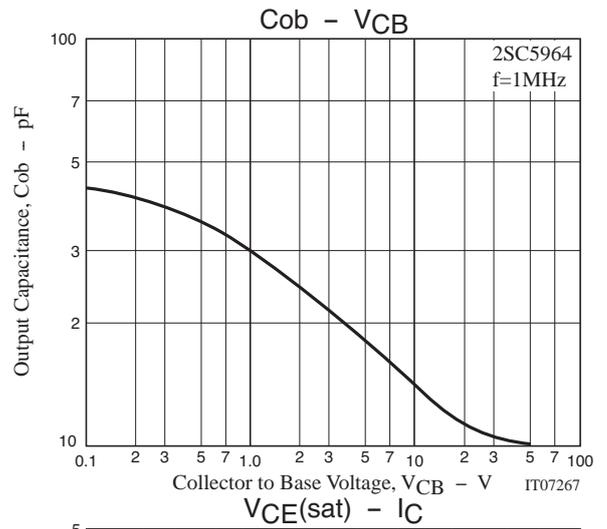
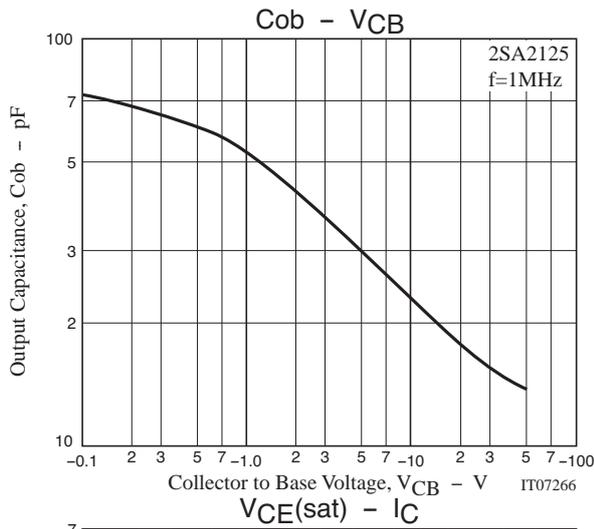
For PNP, the polarity is reversed.

### Ordering Information

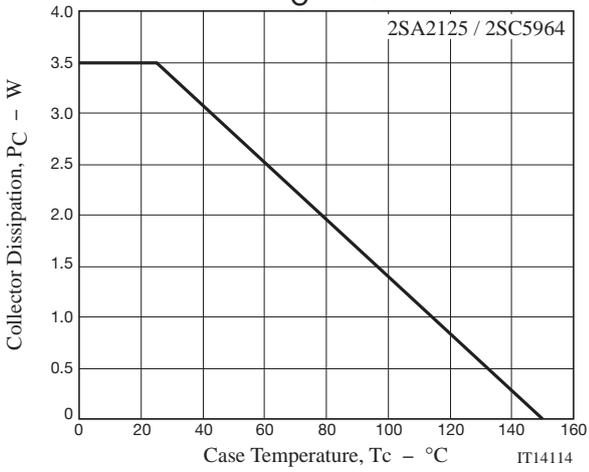
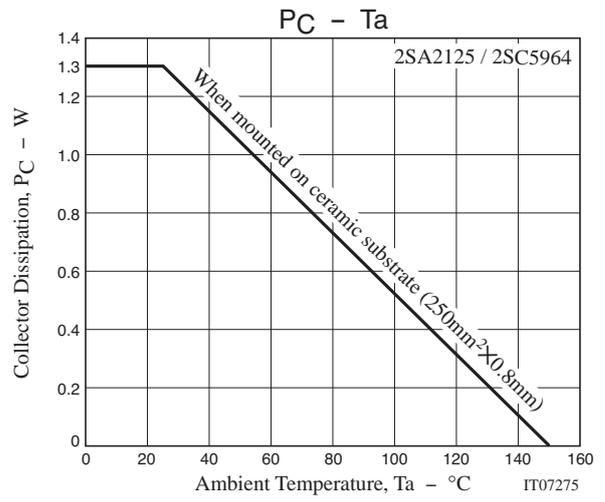
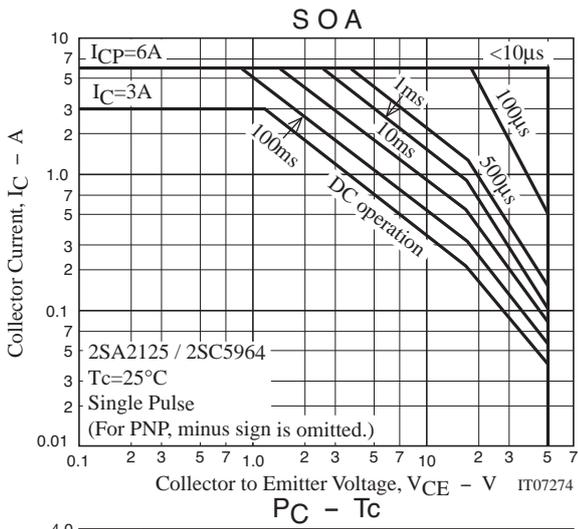
Device	Package	Shipping	memo
2SA2125-TD-E	PCP	1,000pcs./reel	Pb Free
2SA2125-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free
2SC5964-TD-E	PCP	1,000pcs./reel	Pb Free
2SC5964-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free

2SA2125/2SC5964





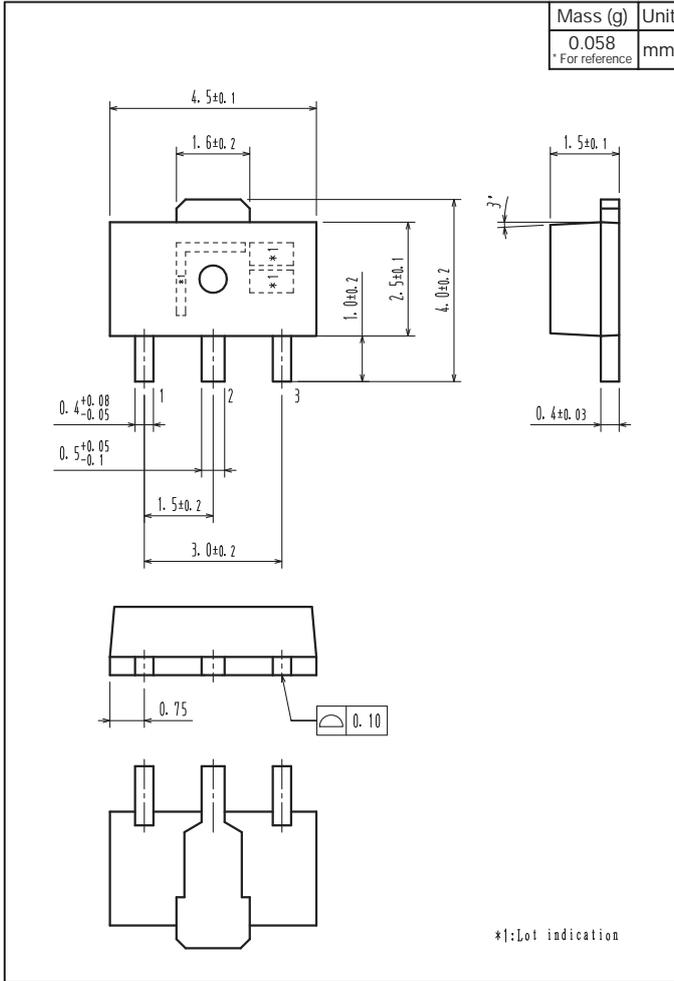
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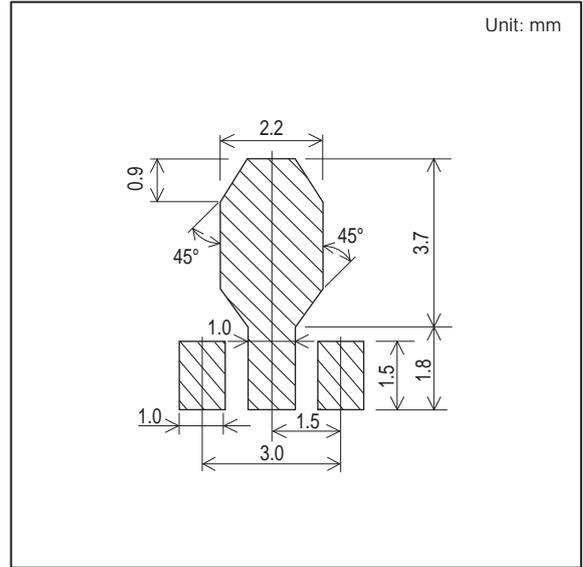
# 2SA2125/2SC5964

## Outline Drawing

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



## Land Pattern Example



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