



**CHENMKO ENTERPRISE CO.,LTD**

*Halogens free devices*

**SURFACE MOUNT  
NPN Switching Transistor**

VOLTAGE 32 Volts CURRENT 1 Ampere

**2SD1664GP**

**APPLICATION**

- \* Telephone and professional communication equipment.
- \* Other switching applications.

**FEATURE**

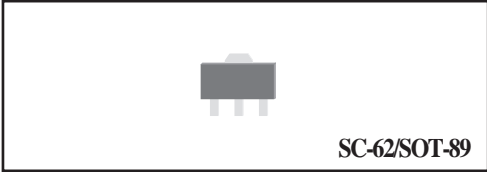
- \* Suitable for high packing density.
- \* Low voltage (Max.=32V) .
- \* High saturation current capability.
- \* Voltage controlled small signal switch.

**CONSTRUCTION**

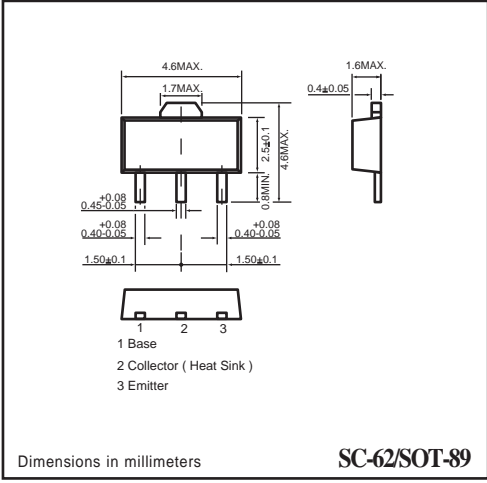
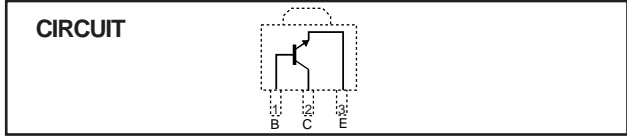
- \* NPN Switching Transistor

**MARKING**

- \* HFE(R):DAP
- \* HFE(P):P64
- \* HFE(Q):Q64



SC-62/SOT-89



**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CB0</sub>	collector-base voltage	open emitter	—	40	V
V <sub>CEO</sub>	collector-emitter voltage	open base	—	32	V
V <sub>EBO</sub>	emitter-base voltage	open collector	—	5	V
I <sub>c</sub>	collector current DC		—	1	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	—	2000	mW
T <sub>stg</sub>	storage temperature		-55	+150	°C
T <sub>j</sub>	junction temperature		—	150	°C

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## RATING CHARACTERISTIC CURVES ( 2SD1664GP )

### CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$BV_{CBO}$	collector-base breakdown voltage	$I_E = 0; I_C = 50\text{ }\mu\text{A}$	40	–	V
$BV_{CEO}$	collector-emitter breakdown voltage	$I_B = 0; I_C = 1\text{ mA}$	32	–	V
$BV_{EBO}$	emitter-base breakdown voltage	$I_C = 0; I_E = 50\text{ }\mu\text{A}$	5	–	V
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 20\text{ V}$	–	500	nA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 4\text{ V}$	–	500	nA
$h_{FE}$	DC current gain	$V_{CE} = 3\text{ V}$ ; note 1 $I_C = 100\text{ mA}$	82	390	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	–	400	mV
$C_c$	collector capacitance	$I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	15 Typ.	pF
$f_T$	transition frequency	$I_C = -50\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	–	150 Typ.	MHz

### Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .
2.  $h_{FE}$ : R Grade: 82~180  
P Grade: 120~270  
Q Grade: 180~390

# RATING CHARACTERISTIC CURVES ( 2SD1664GP )

## Typical Electrical Characteristics

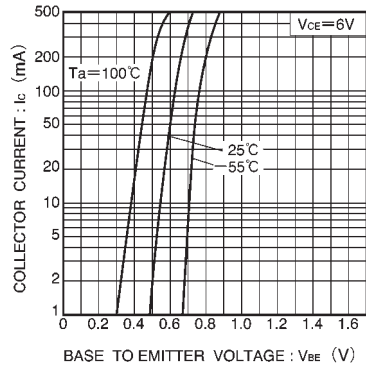


Fig.1 Grounded emitter propagation characteristics

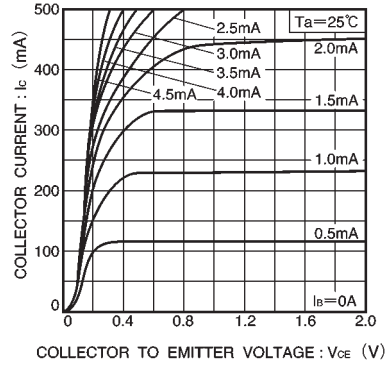


Fig.2 Grounded emitter output characteristics

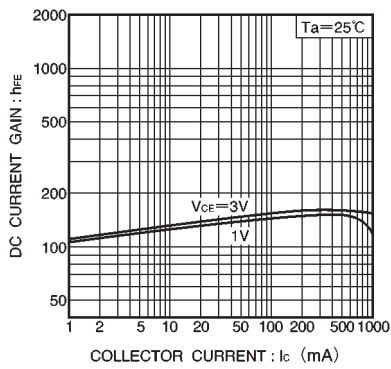


Fig.3 DC current gain vs. collector current ( I )

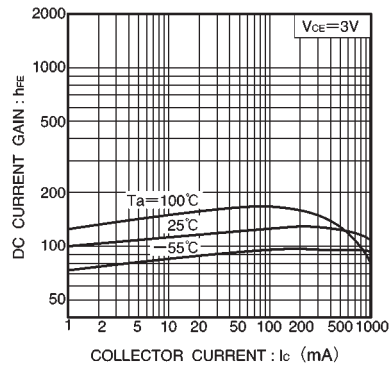


Fig.4 DC current gain vs. collector current ( II )

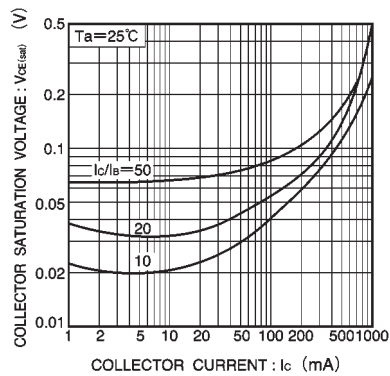


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

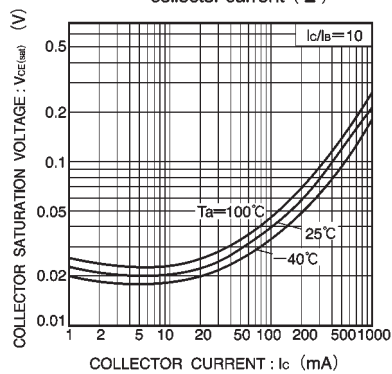


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

## RATING CHARACTERISTIC CURVES ( 2SD1664GP )

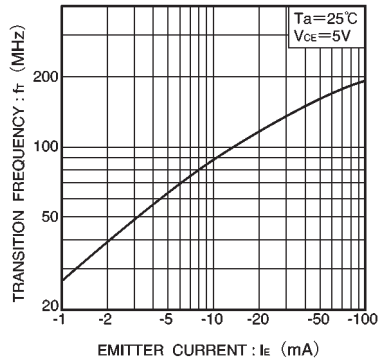


Fig.7 Gain bandwidth product vs. emitter current

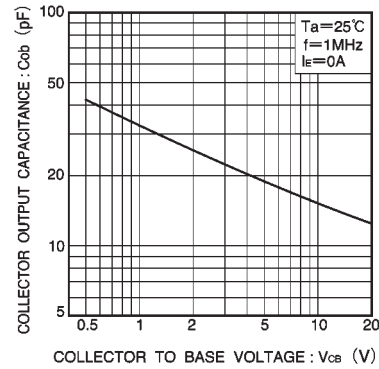


Fig.8 Collector output capacitance vs. collector-base voltage

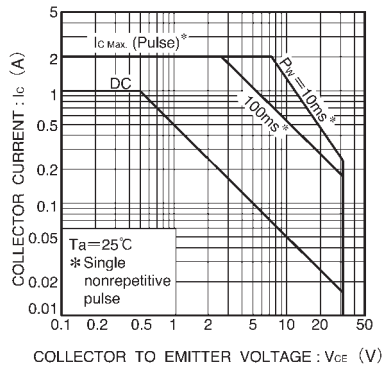


Fig.9 Safe operating area (2SD1664)

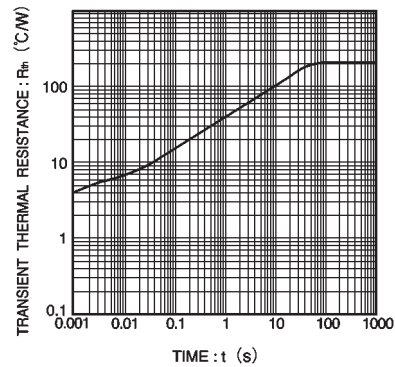


Fig.10 Transient thermal resistance (2SD1664)

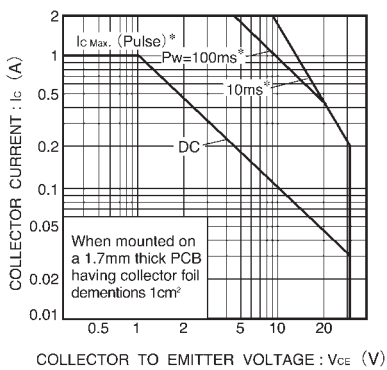


Fig.11 Safe operating area

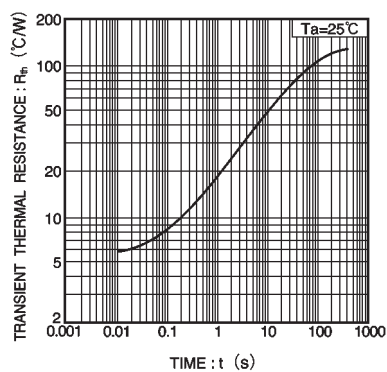


Fig.12 Transient thermal resistance