



**CHENMKO ENTERPRISE CO.,LTD**

**2SD1781KPT**

*Lead free devices*

**SURFACE MOUNT  
NPN Switching Transistor**

VOLTAGE 32 Volts CURRENT 0.8 Ampere

**APPLICATION**

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

**FEATURE**

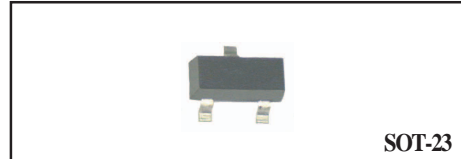
- \* Small surface mounting type. (SOT-23)
- \* Collector peak current (Max.=1500mA).
- \* Suitable for high packing density.
- \* Low voltage (Max.=32V) .
- \* High saturation current capability.
- \* Voltage controlled small signal switch.

**CONSTRUCTION**

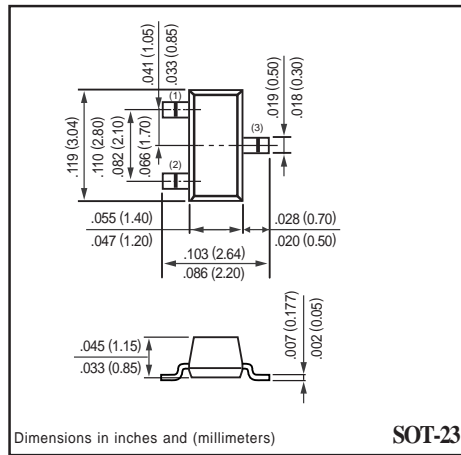
- \* NPN Switching Transistor

**MARKING**

- \* HFE(Q):D9C-
- \* HFE(R):NU

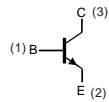


**SOT-23**



**SOT-23**

**CIRCUIT**



**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	-	40	V
$V_{CEO}$	collector-emitter voltage	open base	-	32	V
$V_{EBO}$	emitter-base voltage	open collector	-	5	V
$I_C$	collector current DC		-	0.8	A
$I_{CM}$	peak collector current		-	1.5	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	-	200	mW
$T_{stg}$	storage temperature		-55	+150	$^\circ\text{C}$
$T_j$	junction temperature		-	150	$^\circ\text{C}$

**Note**

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

## RATING CHARACTERISTIC CURVES ( 2SD1781KPT )

### CHARACTERISTICS

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

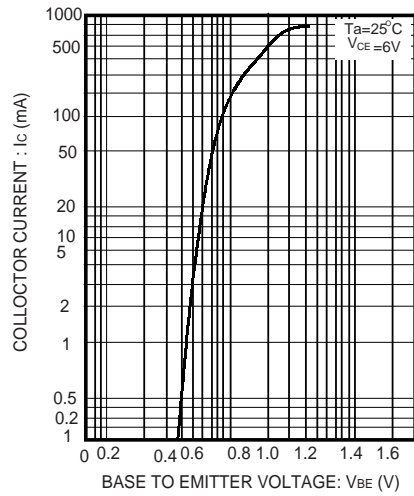
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$BV_{CBO}$	collector-base breakdown voltage	$I_E = 0; I_C = -50\text{ }\mu\text{A}$	40	–	V
$BV_{CEO}$	collector-emitter breakdown voltage	$I_B = 0; I_C = -1\text{ mA}$	32	–	V
$BV_{EBO}$	emitter-base breakdown voltage	$I_C = 0; I_E = -50\text{ }\mu\text{A}$	5	–	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 $I_C = 100\text{ mA}$	120	390	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	–	400	mV
$C_C$	collector capacitance	$I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	10 Typ.	pF
$f_T$	transition frequency	$I_C = 50\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	–	150 Typ.	MHz

### Note

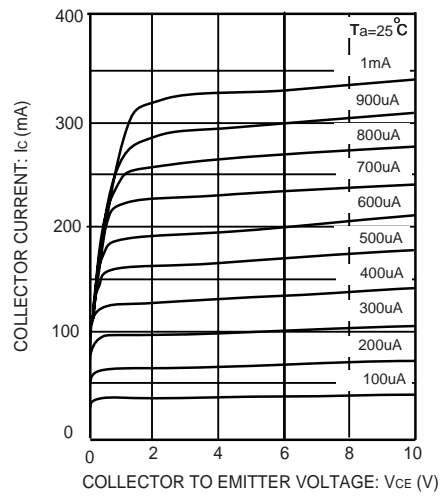
1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .
2.  $h_{FE}$ : Q Grade: 120~270  
R Grade: 180~390

## RATING CHARACTERISTIC CURVES ( 2SD1781KPT )

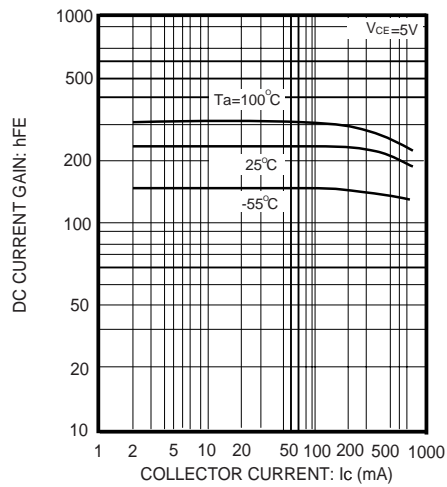
**Fig.1** Grounded emitter propagation characteristics



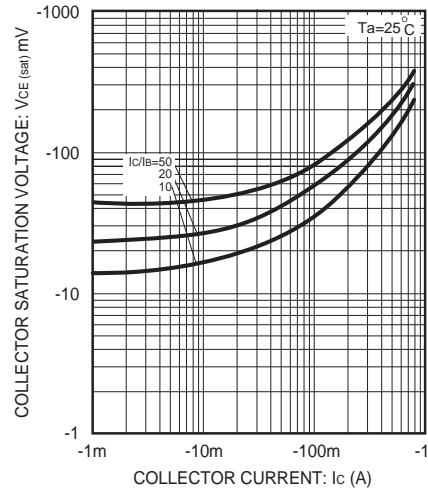
**Fig.2** Grounded emitter output characteristics



**Fig.3** DC Current gain vs. collector current

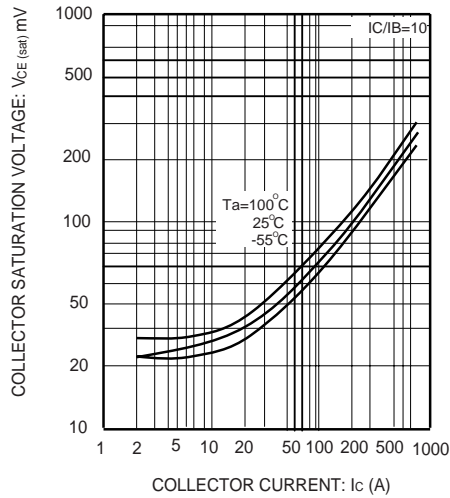


**Fig.4** Collector-emitter saturation voltage vs. collector current (1)

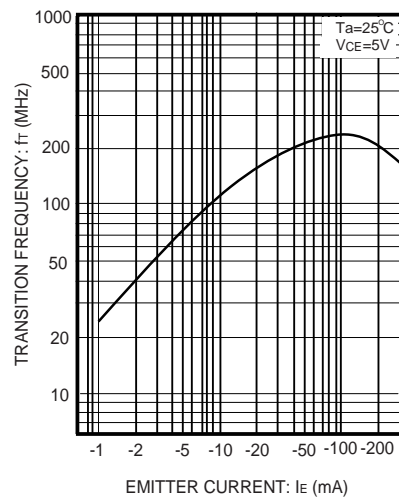


## RATING CHARACTERISTIC CURVES ( 2SD1781KPT )

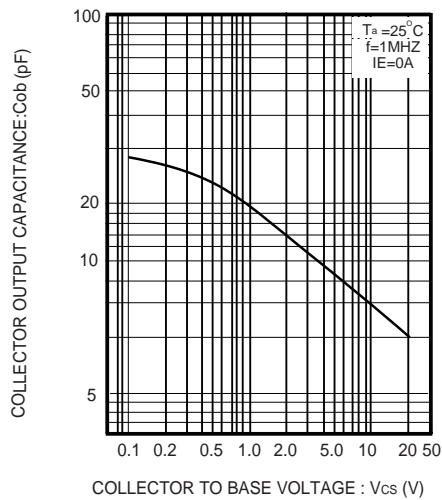
**Fig.5 Collector-emitter saturation voltage vs. collector current (2)**



**Fig.6 Gain bandwidth product vs. emitter current**



**Fig.7 Collector output capacitance vs. collector-base voltage**



**Fig.8 Emitter input capacitance vs. emitter-base voltage**

