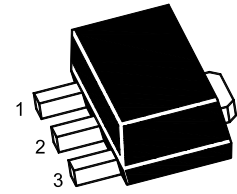


# 2SC4541U

## NPN Silicon Epitaxial Planar Power Transistor

### Features

- Low saturation voltage
- High speed switching time
- High saturation current capability



1.Base 2.Collector 3.Emitter  
SOT-89 Plastic Package

### Applications

- For power switching and power amplifier applications

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

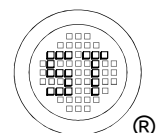
Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	80	V
Collector Emitter Voltage	$V_{CEO}$	50	V
Emitter Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	3	A
Base Current	$I_B$	0.6	A
Total Power Dissipation	$P_{tot}$	0.5 <sup>1)</sup> 1 <sup>2)</sup>	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	250 <sup>1)</sup> 125 <sup>2)</sup>	$^\circ\text{C/W}$

<sup>1)</sup>Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

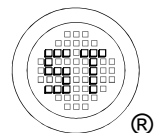
<sup>2)</sup>Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



# 2SC4541U

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$ at $V_{CE} = 2\text{ V}$ , $I_C = 2\text{ A}$	$h_{FE}$ $h_{FE}$	120 40	- -	400 -	- -
Collector Base Cutoff Current at $V_{CB} = 80\text{ V}$	$I_{CBO}$	-	-	0.1	$\mu\text{A}$
Emitter Base Cutoff Current at $V_{EB} = 6\text{ V}$	$I_{EBO}$	-	-	0.1	$\mu\text{A}$
Collector Base Breakdown Voltage at $I_C = 0.1\text{ mA}$	$V_{(BR)CBO}$	80	-	-	V
Collector Emitter Breakdown Voltage at $I_C = 10\text{ mA}$	$V_{(BR)CEO}$	50	-	-	V
Emitter Base Breakdown Voltage at $I_E = 0.1\text{ mA}$	$V_{(BR)EBO}$	6	-	-	V
Collector Emitter Saturation Voltage at $I_C = 1.5\text{ A}$ , $I_B = 75\text{ mA}$	$V_{CE(sat)}$	-	-	0.5	V
Base Emitter Saturation Voltage at $I_C = 1.5\text{ A}$ , $I_B = 75\text{ mA}$	$V_{BE(sat)}$	-	-	1.2	V
Transition Frequency at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$	$f_T$	-	100	-	MHz
Collector Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	10	-	pF
Turn-on Time at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$	$t_{on}$	-	100	-	ns
Storage Time at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$	$t_{stg}$	-	500	-	ns
Fall Time at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$	$t_f$	-	100	-	ns



## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

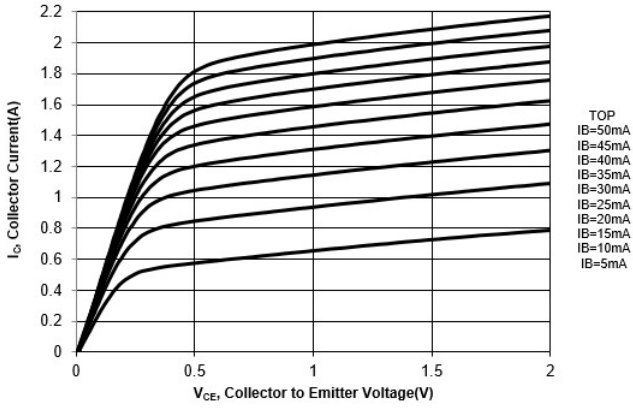


Fig. 2 Collector Current vs.  $V_{BE}$

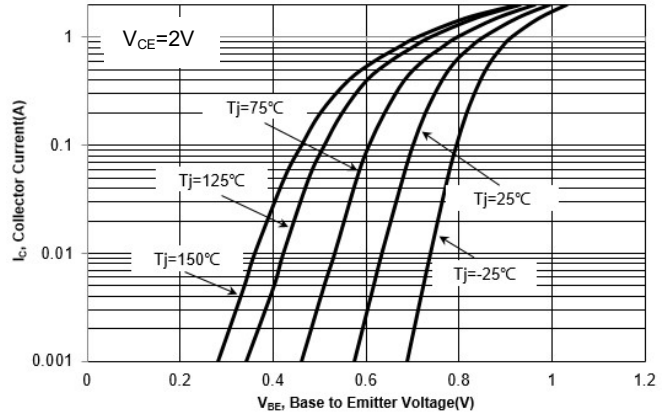


Fig. 3  $h_{FE}$  vs. Collector Current

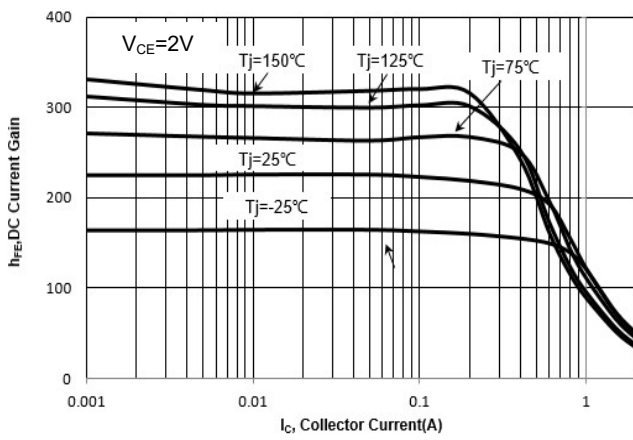
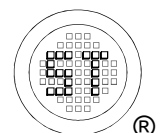
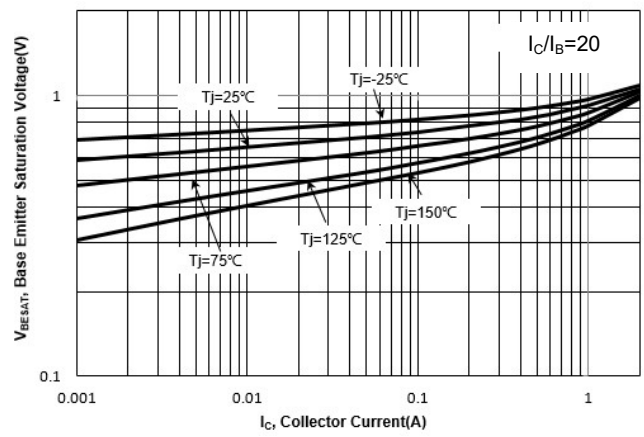


Fig. 4  $V_{BE(sat)}$  vs. Collector Current



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## Electrical Characteristics Curves

Fig. 5  $V_{CE(sat)}$  vs. Collector Current

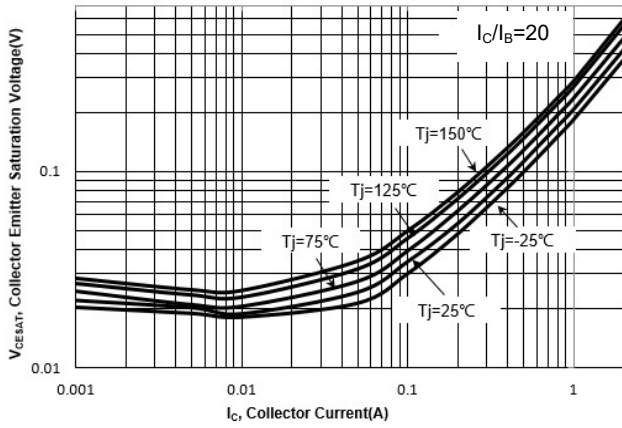


Fig. 6. Output Capacitance

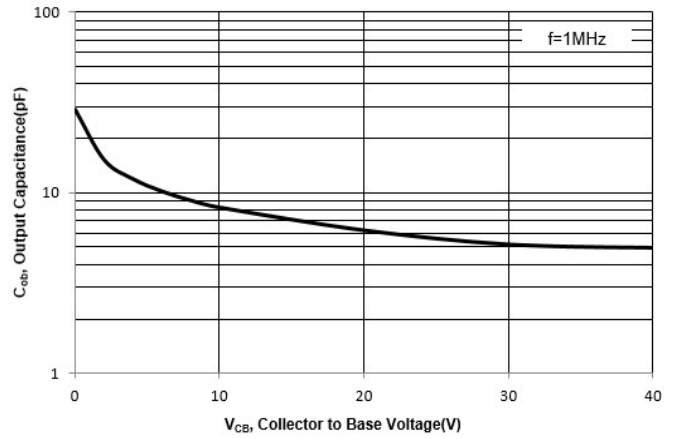
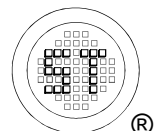
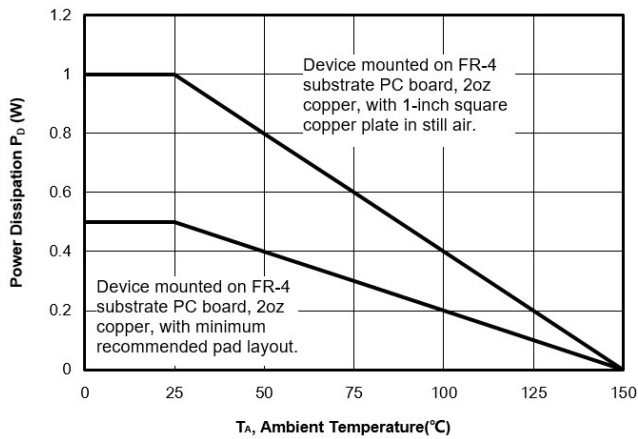


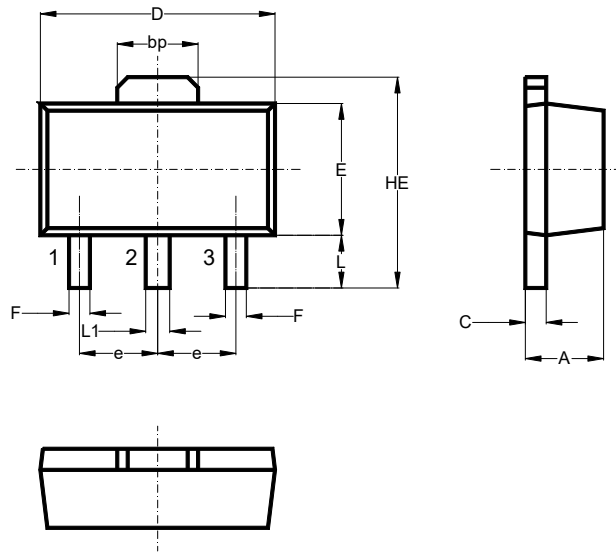
Fig. 7 Power Derating Curve



# 2SC4541U

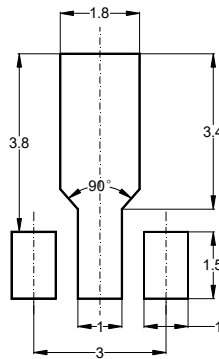
## Package Outline (Dimensions in mm)

## SOT-89



Unit	A	bp	C	D	E	F	HE	e	L	L1
mm	1.6	1.60	0.5	4.6	2.6	0.45	4.25	1.5	1.05	0.51
	1.4	1.50	0.3	4.4	2.4	0.35	3.75	typ.	0.95	0.41

## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-89	12	$8 \pm 0.1$	$0.315 \pm 0.004$	178	7	1,000
				330	13	4,000

## Marking information

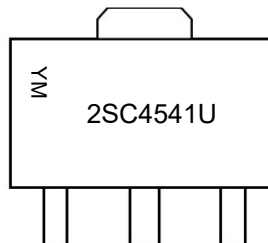
"2SC4541U" = Part No.

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial



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