



SOT-89-3L Plastic-Encapsulate Transistors

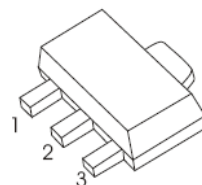
2SD1005 TRANSISTOR (NPN)

FEATURES

- Small Flat Package
- High Breakdown Voltage
- Excellent DC Current Gain Linearity

SOT-89-3L

1. BASE
2. COLLECTOR
3. EMITTER



MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	80	V
V_{EBO}	Emitter-Base Voltage	5	V
I_{C}	Collector Current	1	A
P_{C}	Collector Power Dissipation	500	mW
$R_{\theta\text{JA}}$	Thermal Resistance From Junction To Ambient	250	$^{\circ}\text{C/W}$
T_{j}	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	$I_{\text{C}}=0.1\text{mA}, I_{\text{E}}=0$	100			V
Collector-emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	$I_{\text{C}}=1\text{mA}, I_{\text{B}}=0$	80			V
Emitter-base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	$I_{\text{E}}=0.1\text{mA}, I_{\text{C}}=0$	5			V
Collector cut-off current	I_{CBO}	$V_{\text{CB}}=100\text{V}, I_{\text{E}}=0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{\text{EB}}=5\text{V}, I_{\text{C}}=0$			0.1	μA
DC current gain	$h_{\text{FE}(1)}^*$	$V_{\text{CE}}=2\text{V}, I_{\text{C}}=100\text{mA}$	90		400	
	$h_{\text{FE}(2)}^*$	$V_{\text{CE}}=2\text{V}, I_{\text{C}}=500\text{mA}$	25			
Collector-emitter saturation voltage	$V_{\text{CE(sat)}}^*$	$I_{\text{C}}=500\text{mA}, I_{\text{B}}=50\text{mA}$			0.5	V
Base-emitter saturation voltage	$V_{\text{BE(sat)}}^*$	$I_{\text{C}}=500\text{mA}, I_{\text{B}}=50\text{mA}$			1.5	V
Base-emitter voltage	V_{BE}^*	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=10\text{mA}$	0.6		0.7	V
Transition frequency	f_{T}	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=10\text{mA}$		160		MHz
Collector output capacitance	C_{ob}	$V_{\text{CB}}=10\text{V}, I_{\text{E}}=0, f=1\text{MHz}$		12		pF

*Pulse test

CLASSIFICATION OF $h_{\text{FE}(1)}$

RANK	W	V	U
RANGE	90 - 180	135 - 270	200 - 400
MARKING	BW	BV	BU