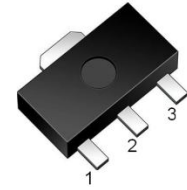


REPLACEMENT TYPE : 2SD965A

FEATURES

- Low Collector-Emitter Saturation Voltage
- Large Collector Power Dissipation and Current
- Mini Power Type Package



SOT-89 MARKING: 965

1:BASE 2:COLLECTOR 3:EMITTER

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current-Continuous	I_C	5	A
Collector Power Dissipation	P_C	750	mW
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	167	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 ~150	$^\circ\text{C}$

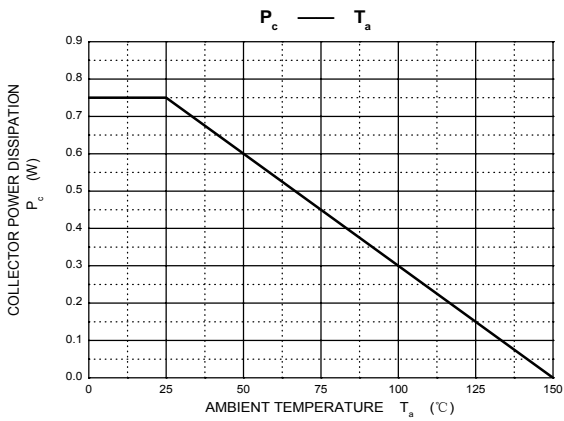
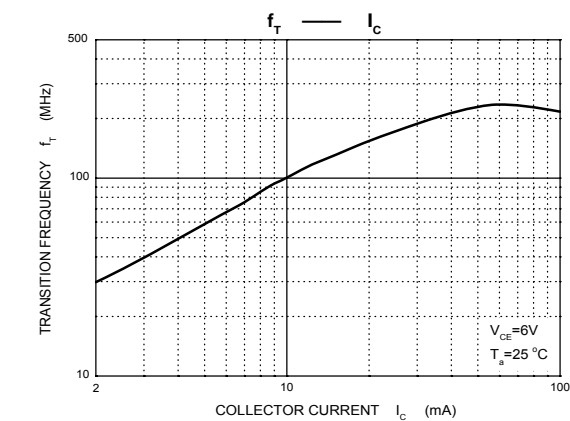
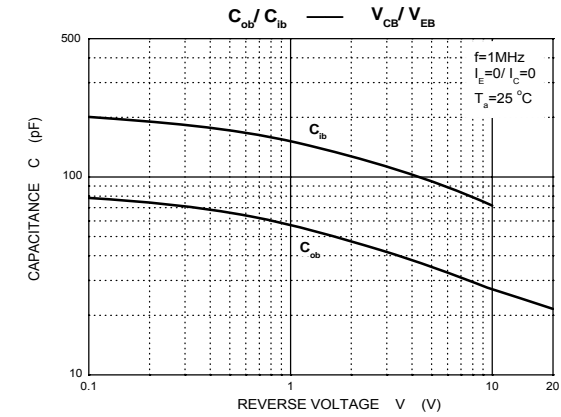
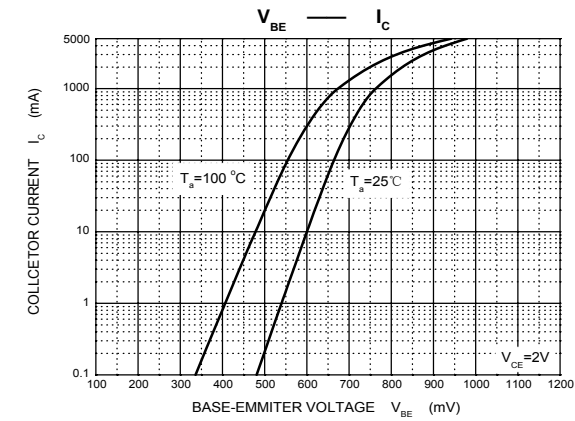
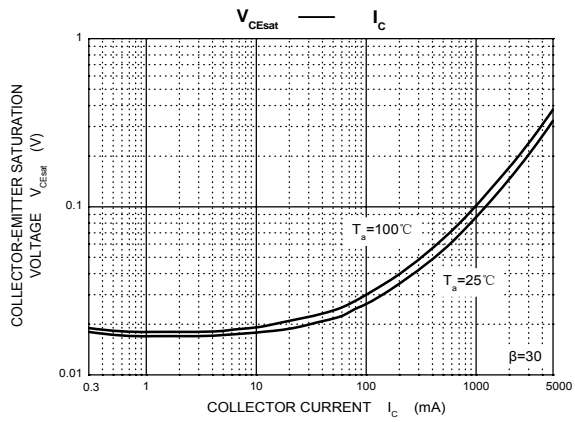
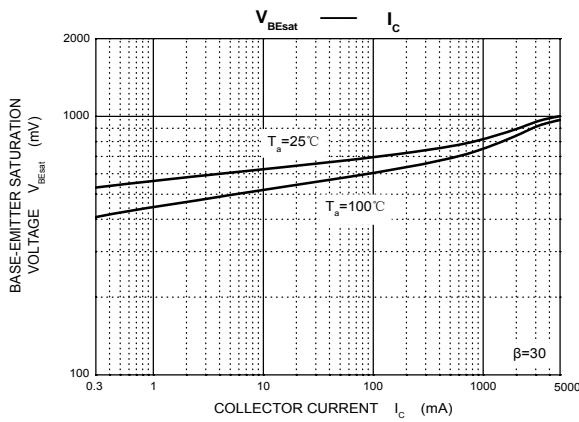
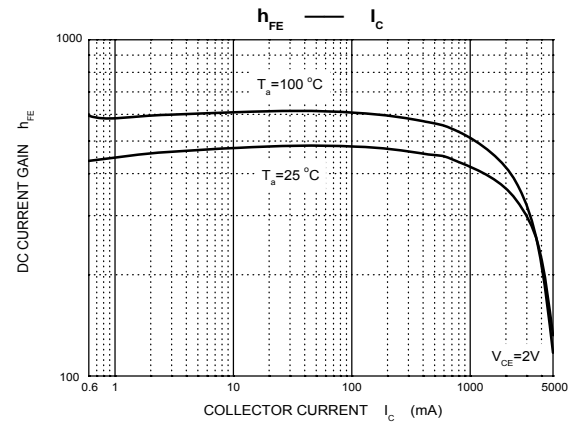
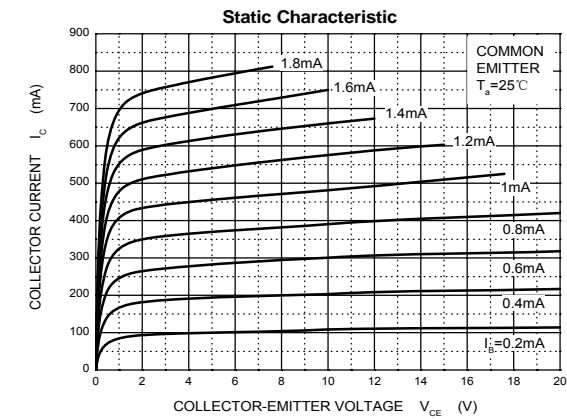
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

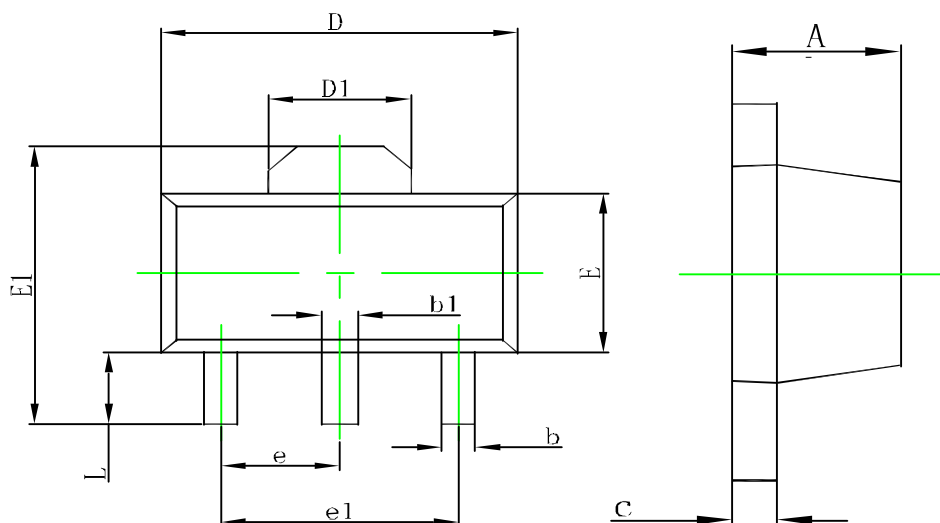
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	40			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$	20			V
Emitter-Base Breakdown Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	7			V
Collector Cut-off Current	I_{CBO}	$V_{CB}=10\text{V}, I_E=0$			0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=7\text{V}, I_C=0$			0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=2\text{V}, I_C=1\text{mA}$		200		
	$h_{FE(2)}$	$V_{CE}=2\text{V}, I_C=500\text{mA}$	230		800	
	$h_{FE(3)}$	$V_{CE}=2\text{V}, I_C=2\text{A}$	150			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3\text{A}, I_B=0.1\text{A}$			1	V
Output Capacitance	C_{ob}	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$			50	pF
Transition Frequency	f_T	$V_{CE}=6\text{V}, I_C=50\text{mA}, f=200\text{MHz}$		150		MHz

CLASSIFICATION OF h_{FE}

Rank	Q	R	S
Range	230-380	340-600	560-800

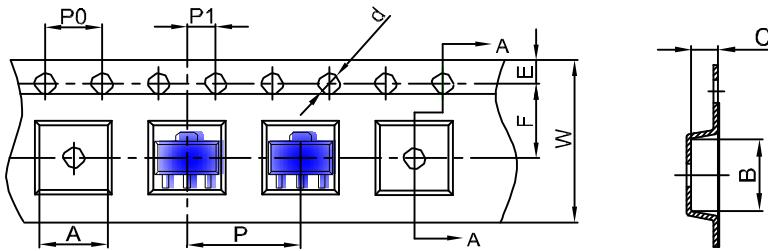
Typical Characteristics



SOT-89 Package Outline Dimensions


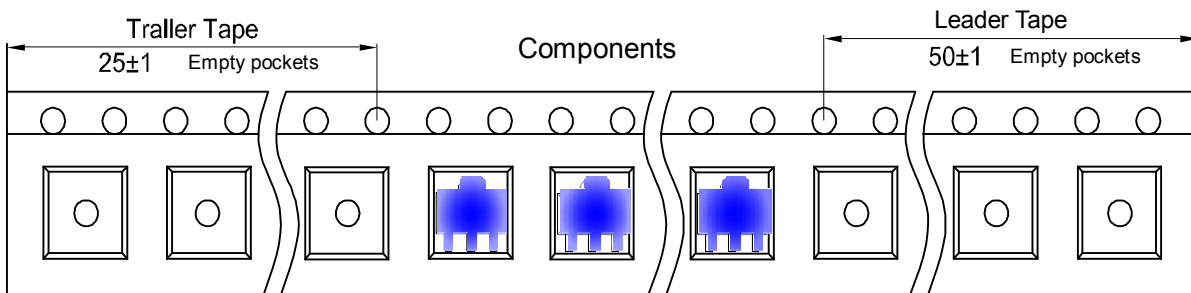
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF.		0.061REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP.		0.060TYP.	
e1	3.000TYP.		0.118TYP.	
L	0.900	1.200	0.035	0.047

SOT-89 Tape and Reel

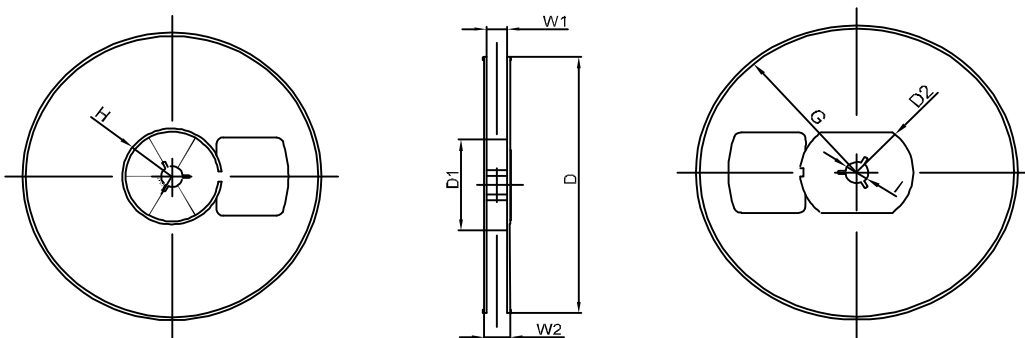


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-89	4.85	4.45	1.85	φ1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-89 Tape Leader and Trailer



SOT-89 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	φ 180	60.00	R32.00	R86.50	R30.00	φ 13.00	13.20	16.50
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1