



TSC2059

General Purpose NPN Transistor

SOT-23



Pin assignment:

1. Base
2. Emitter
3. Collector

$BV_{CEO} = 40V$

$I_C = 50mA$

$V_{CE(SAT)} = 0.2V(\text{typ.}) @ I_C / I_B = 500mA / 50mA$

Features

- ✧ High transition frequency
- ✧ Very low capacitance
- ✧ Small $r_{bb'}$ -Cc and high gain
- ✧ Small NF.

Ordering Information

Part No.	Packing	Package	Marking
TSC2059CX	3kpcs / Reel	SOT-23	3E

Absolute Maximum Rating ($T_a = 25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	18V	V
Collector-Emitter Voltage	V_{CEO}	25V	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	50	mA
Collector Power Dissipation	P_D	225	mW
Operating Junction Temperature	T_J	+150	$^{\circ}C$
Operating Junction and Storage Temperature Range	T_{STG}	- 55 to +150	$^{\circ}C$

Electrical Characteristics

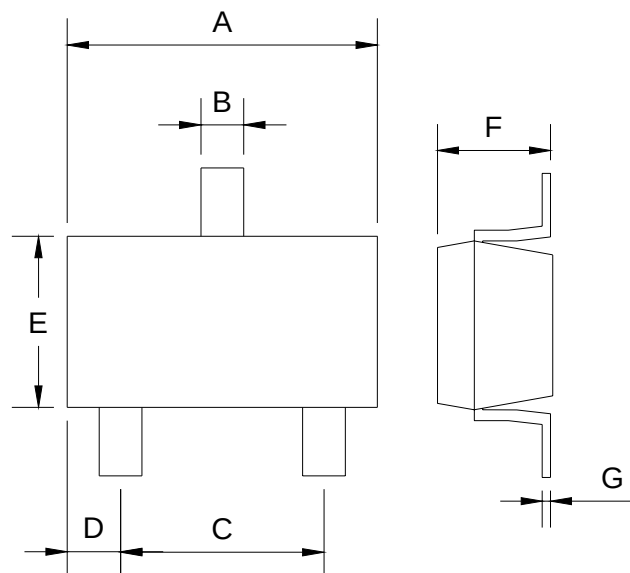
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Collector-Base Voltage	$I_C = 10\mu A, I_E = 0$	BV_{CBO}	25	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = 1mA, I_B = 0$	BV_{CEO}	18	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 10\mu A, I_C = 0$	BV_{EBO}	3	--	--	V
Collector Cutoff Current	$V_{CB} = 10V, I_E = 0$	I_{CBO}	--	--	0.5	μA
Emitter Cutoff Current	$V_{EB} = 2V, I_C = 0$	I_{EBO}	--	--	0.5	μA
Collector-Emitter Saturation Voltage	$I_C / I_B = 20mA / 4mA$	$V_{CE(SAT)1}$	--	--	0.5	V
DC Current Transfer Ratio	$V_{CE} = 10V, I_C = 10mA$	h_{FE}	52	--	270	
Transition Frequency	$V_{CE} = 10V, I_C = 10mA, f = 200MHz$	f_T	--	1000	--	MHz
Output Capacitance	$V_{CB} = 10V, f = 1MHz$	C_{ob}	--	1.4	2.0	pF
	$V_{CB} = 10V, I_C = 10mA, f = 31.8MHz$	$R_{bb'}$ -Cc	--	8	15	pF
	$V_{CE} = 12V, I_C = 2mA, f = 200MHz, R_g = 50\Omega$	NF	--	5.5	--	dB

Note : pulse test: pulse width $\leq 380\mu s$, duty cycle $\leq 2\%$

Classification Of h_{FE}

Rank	K	P	Q
Range	52 - 120	82 - 180	120 - 270

SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	0.30	0.50	0.012	0.020
C	1.70	2.30	0.067	0.091
D	0.25	0.65	0.010	0.026
E	1.2	1.60	0.047	0.063
F	0.89	1.30	0.035	0.051
G	0.08	0.17	0.003	0.006