

## NPN Silicon Planar High Voltage Transistor

### TO-92



### Pin Definition: SOT-223

1. Emitter
2. Collector
3. Base



### Pin Definition: **PRODUCT SUMMARY**

1. Base
2. Collector
3. Emitter

$BV_{CBO}$	600V
$BV_{CEO}$	400V
$I_C$	300mA
$V_{CE(SAT)}$	0.5V @ $I_C / I_B = 50mA / 5mA$

### Features

- High  $BV_{ceo}$ ,  $BV_{cbo}$
- High current gain

### Structure

- Epitaxial Planar Type

### Ordering Information

Part No.	Package	Packing
TSC966CT B0	TO-92	1Kpcs / Bulk
TSC966CT A3	TO-92	2Kpcs / Ammo
TSC966CW RPG	SOT-223	2.5Kpcs / 13" Reel

Note: "G" denote for Halogen Free Product

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

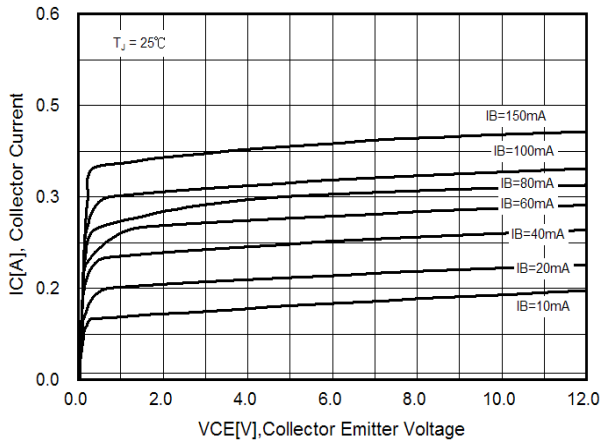
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	$V_{CBO}$	600	V
Collector-Emitter Voltage	$V_{CES}$	600	V
Collector-Emitter Voltage	$V_{CEO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	7	V
Collector Current	DC	0.3	A
	Pulse	1	
Total Power Dissipation @ $T_A=25^{\circ}C$	TO-92	0.9	W
	SOT-223	1	
Operating Junction Temperature	$T_J$	+150	$^{\circ}C$
Operating Junction and Storage Temperature Range	$T_{STG}$	- 55 to +150	$^{\circ}C$

### Electrical Specifications ( $T_a = 25^{\circ}C$ unless otherwise noted)

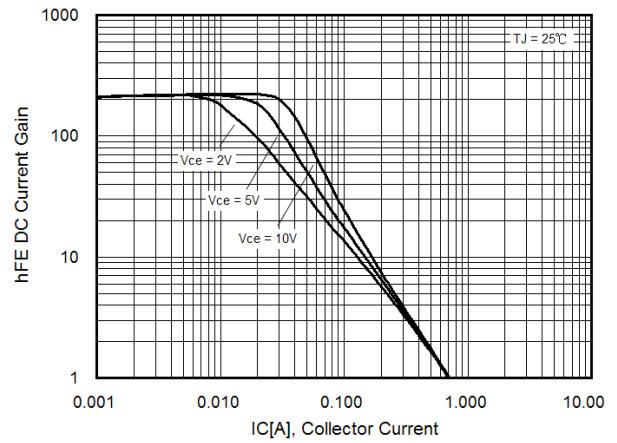
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$I_C = 50\mu A$	$BV_{CBO}$	600	--	--	V
Collector-Emitter Saturation Voltage	$I_C = 100\mu A, V_{BE} = 0$	$BV_{CES}$	600	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = 1mA$	$BV_{CEO}$	400	--	--	V
Emitter-Base Breakdown Voltage	$I_E = 50\mu A$	$BV_{EBO}$	7	--	--	V
Collector-Base Cutoff Current	$V_{CB} = 600V$	$I_{CBO}$	--	--	0.5	$\mu A$
Collector-Emitter Cutoff Current	$V_{CE} = 400V$	$I_{CEO}$	--	--	1	$\mu A$
Emitter-Base Cutoff Current	$V_{EB} = 7V$	$I_{EBO}$	--	--	1.5	$\mu A$
Collector-Emitter Saturation Voltage	$I_C = 50mA, I_B = 5mA$	$V_{CE(SAT)}$	--	--	0.5	V
Base-Emitter Saturation Voltage	$I_C = 50mA, I_B = 5mA$	$V_{BE(SAT)}$	--	--	1	V
DC Current Transfer Ratio	$V_{CE} = 5V, I_C = 1mA$	$h_{FE1}$	100	--	--	
	$V_{CE} = 5V, I_C = 20mA$	$h_{FE2}$	90	--	300	
Transition Frequency	$V_{CE} = 10V, I_E = 20mA$	$f_T$	50	--	--	MHz
Output Capacitance	$V_{CB} = 20V, f = 1MHz$	$C_{ob}$	--	--	7	pF

**Electrical Characteristics Curve** ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

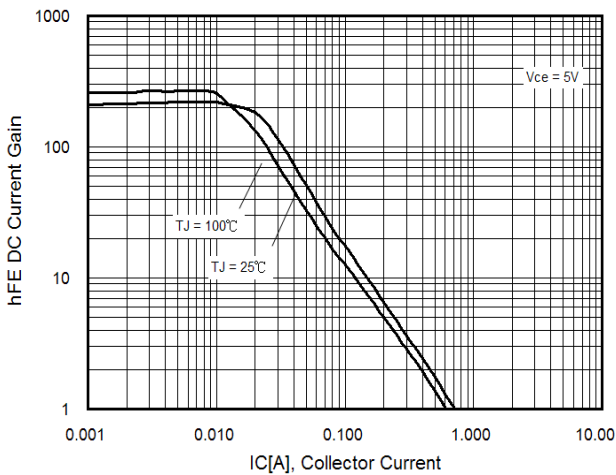
**Figure 1. Static Characteristics**



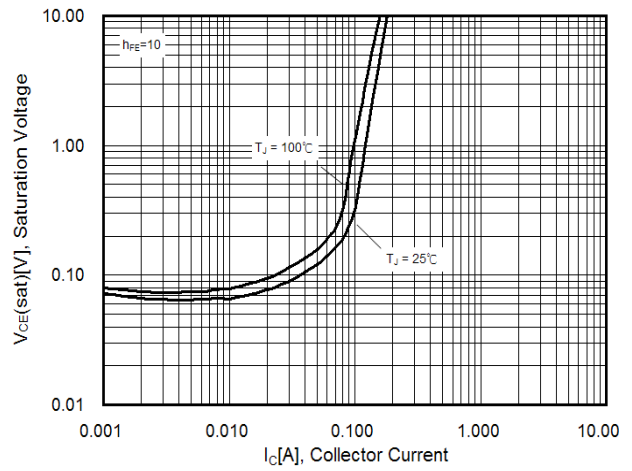
**Figure 2. DC Current Gain**



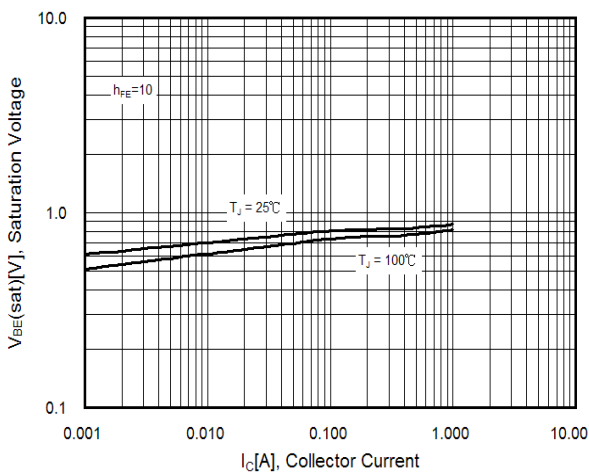
**Figure 3. VCE(SAT) v.s. IC**



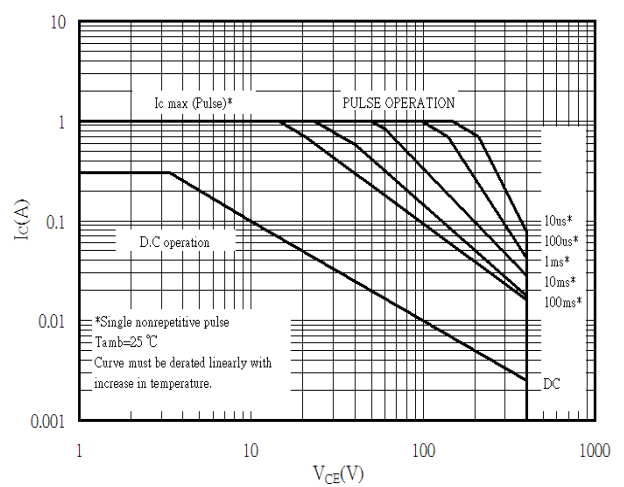
**Figure 4. VBE(sat) vs IC**



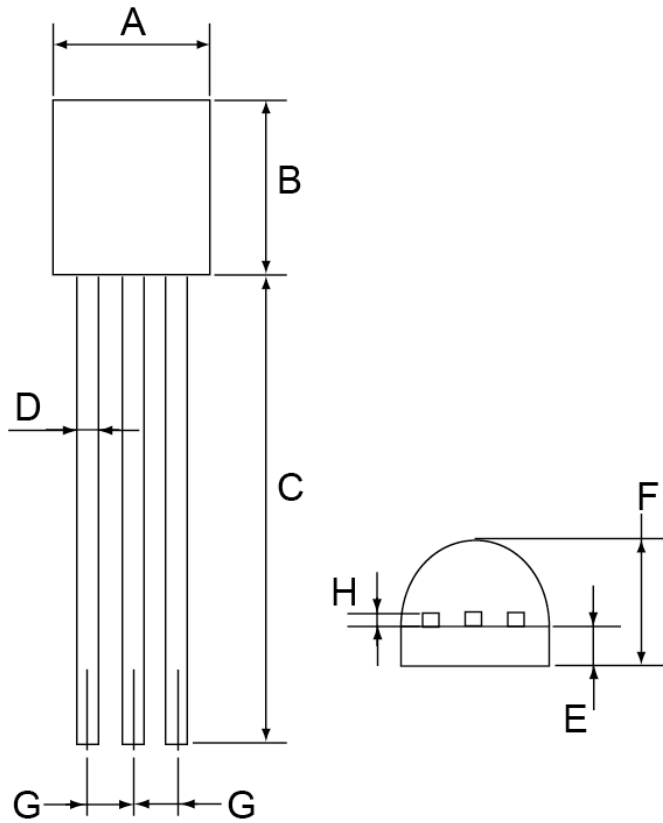
**Figure 5. VBE(on) vs IC**



**Figure 6. Safety Operation Area**



**TO-92 Mechanical Drawing**



TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
B	4.30	4.70	0.169	0.185
C	14.30(typ)		0.563(typ)	
D	0.43	0.49	0.017	0.019
E	1.18	1.28	0.046	0.050
F	3.30	3.70	0.130	0.146
G	1.27	1.31	0.05	0.051
H	0.37	0.43	0.015	0.017

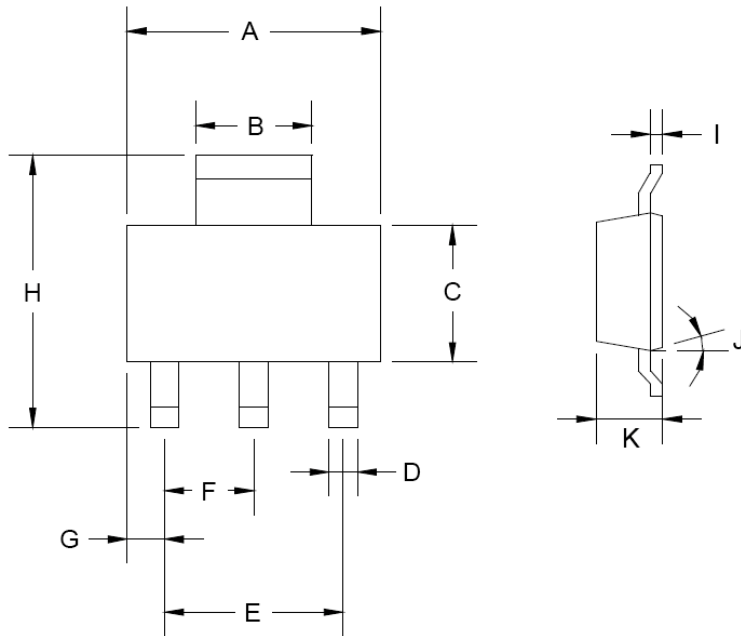
**Marking Diagram**



- Y** = Year Code
- M** = Month Code  
 (A=Jan, B=Feb, C=Mar, D=Apl, E=May, F=Jun, G=Jul, H=Aug, I=Sep, J=Oct, K=Nov, L=Dec)
- L** = Lot Code

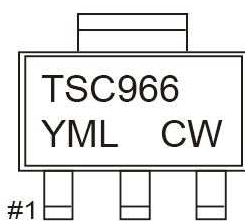
#1

**SOT-223 Mechanical Drawing**



SOT-223 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.350	6.850	0.250	0.270
B	2.900	3.100	0.114	0.122
C	3.450	3.750	0.136	0.148
D	0.595	0.635	0.023	0.025
E	4.550	4.650	0.179	0.183
F	2.250	2.350	0.088	0.093
G	0.835	1.035	0.032	0.041
H	6.700	7.300	0.263	0.287
I	0.250	0.355	0.010	0.014
J	10°	16°	10°	16°
K	1.550	1.800	0.061	0.071

**Marking Diagram**



- Y** = Year Code
- M** = Month Code for Halogen Free Product  
(**O**=Jan, **P**=Feb, **Q**=Mar, **R**=Apr, **S**=May, **T**=Jun, **U**=Jul, **V**=Aug, **W**=Sep, **X**=Oct, **Y**=Nov, **Z**=Dec)
- L** = Lot Code

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