

## -500V High Voltage PNP Transistor

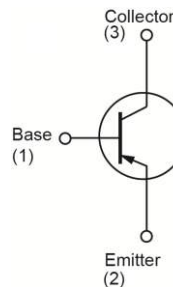
### FEATURES

- Epitaxial Planar Type
- Low Saturation Voltages
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATION

- Consumer electronics
- High voltage switching
- High voltage driver

KEY PERFORMANCE PARAMETERS			
PARAMETER		VALUE	UNIT
BV <sub>CBO</sub>		-500	V
BV <sub>CEO</sub>		-500	V
I <sub>C</sub>		-150	mA
V <sub>CE(SAT)</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-10mA	-0.5	V



**Notes:** MSL 1 (Moisture Sensitivity Level) per J-STD-020

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	-500	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-500	V
Emitter-Base Voltage	V <sub>EBO-</sub>	-5	V
Collector Current (DC)	I <sub>C</sub>	-150	mA
Collector Peak Current (Pulse) <sup>Note</sup>	I <sub>CM</sub>	-500	A
Power Total Dissipation @ T <sub>A</sub> =25°C	P <sub>D</sub>	0.3	W
Maximum Operating Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

**Note:** Single pulse, P<sub>w</sub> ≤ 380μs, Duty ≤ 2%

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction to Ambient Thermal Resistance	R <sub>θJA</sub>	162	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
<b>Static</b> (Note 1)						
Collector-Base Breakdown Voltage	$I_C = -100\mu\text{A}, I_E = 0$	$BV_{CBO}$	-500	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = -10\text{mA}, I_B = 0$	$BV_{CEO}$	-500	--	--	V
Emitter-Base Breakdown Voltage	$I_E = -100\mu\text{A}, I_C = 0$	$BV_{EBO}$	-5	--	--	V
Collector Cutoff Current	$V_{CB} = 120\text{V}, I_E = 0$	$I_{CBO}$	--	--	-100	nA
Emitter Cutoff Current	$V_{EB} = 6\text{V}, I_C = 0$	$I_{EBO}$	--	--	-100	nA
Collector-Base Breakdown Voltage	$I_C = -100\mu\text{A}, I_E = 0$	$BV_{CBO}$	-500	--	--	V
Collector-Emitter Saturation Voltage	$I_C = -20\text{mA}, I_B = -2\text{mA}$	$V_{CE(SAT) 1}$	--	--	-0.2	V
	$I_C = -50\text{mA}, I_B = -10\text{mA}$	$V_{CE(SAT) 2}$	--	--	-0.5	
Base-Emitter Saturation Voltage	$I_C = -50\text{mA}, I_B = -10\text{mA}$	$V_{BE(SAT)}$	--	--	-0.9	V
Base-Emitter on Voltage	$V_{CE} = -10\text{V}, I_C = -50\text{mA}$	$V_{BE(ON)}$	--	--	-0.9	V
DC Current Transfer Ratio	$V_{CE} = -10\text{V}, I_C = -1\text{mA}$	$h_{FE}^1$	150	--	300	
	$V_{CE} = -10\text{V}, I_C = -50\text{mA}$	$h_{FE}^2$	80	--	300	
	$V_{CE} = -10\text{V}, I_C = -100\text{mA}$	$h_{FE}^3$	--	15	--	
<b>Dynamic</b> (Note 2)						
Transition Frequency	$V_{CE} = 10\text{V}, I_C = -100\text{mA}$	$f_T$	--	50	--	MHz
Output Capacitance	$V_{CB} = 20\text{V}, f = 1\text{MHz}$	$C_{ob}$	--	--	8	pF
Turn On Time	$V_{CE} = -100\text{V}, I_C = -50\text{mA}$ $I_{B1} = -5\text{mA}, I_{B2} = -10\text{mA}$	$t_{on}$	--	110	--	ns
Turn Off Time		$t_{off}$	--	1500	--	ns

**Note:**

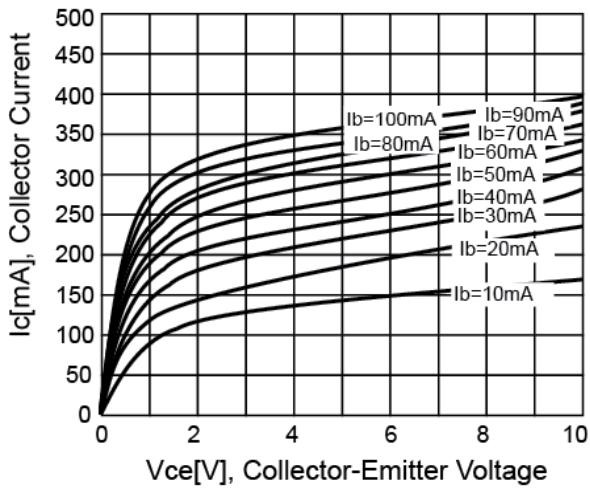
1. Pulse test:  $\leq 380\mu\text{s}$ , duty cycle  $\leq 2\%$
2. For DESIGN AID ONLY, not subject to production testing

**ORDERING INFORMATION**

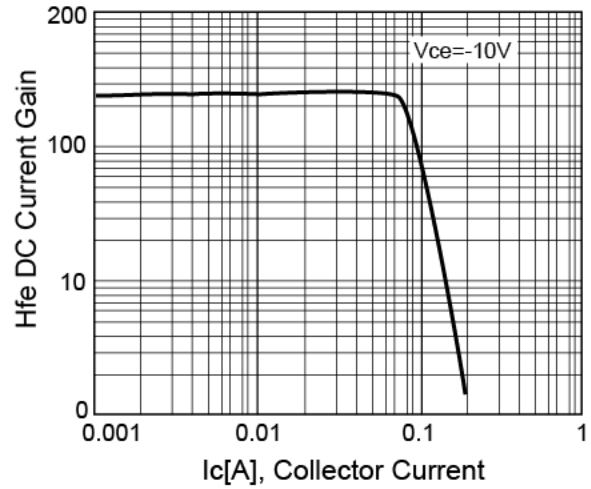
ORDERING CODE	PACKAGE	PACKING
TSA884CX RFG	SOT-23	3,000pcs / 7" Reel

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

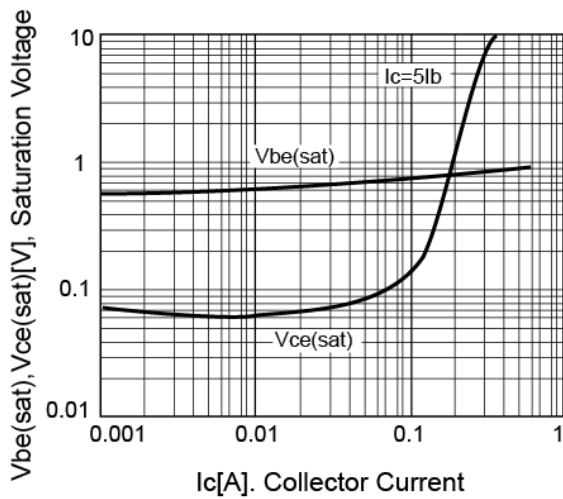
**Figure 1. Static Characteristics**



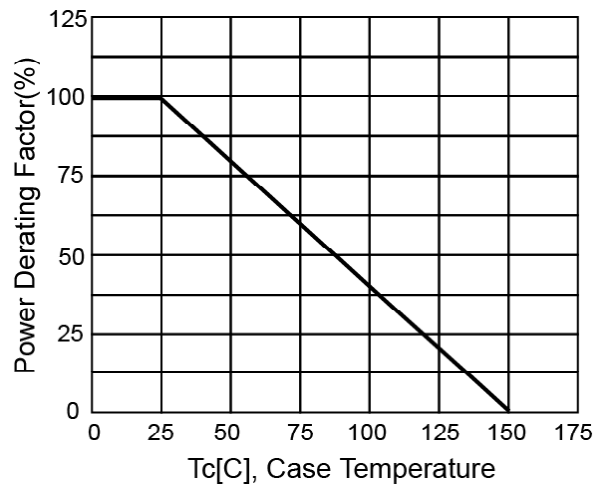
**Figure 2. DC Current Gain**



**Figure 3.  $V_{CE(sat)}$  vs.  $V_{BE(sat)}$**

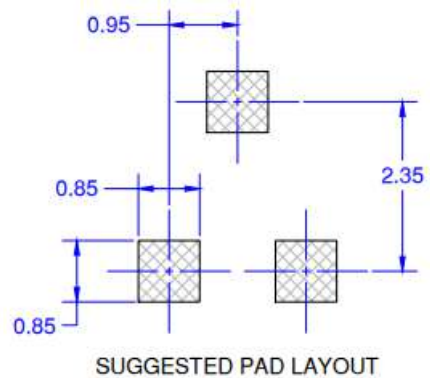
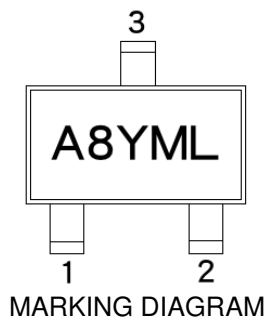
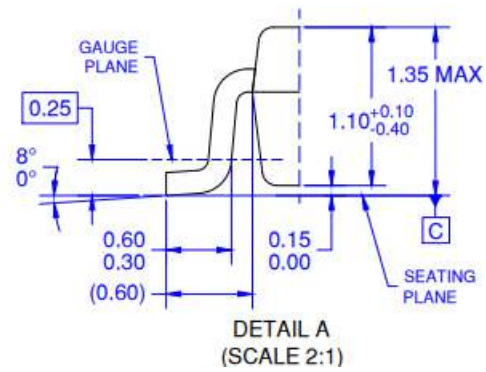
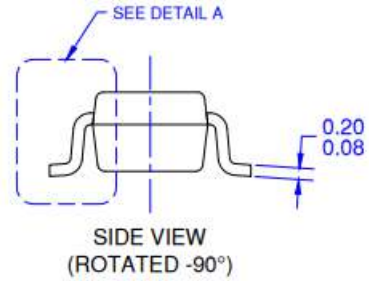
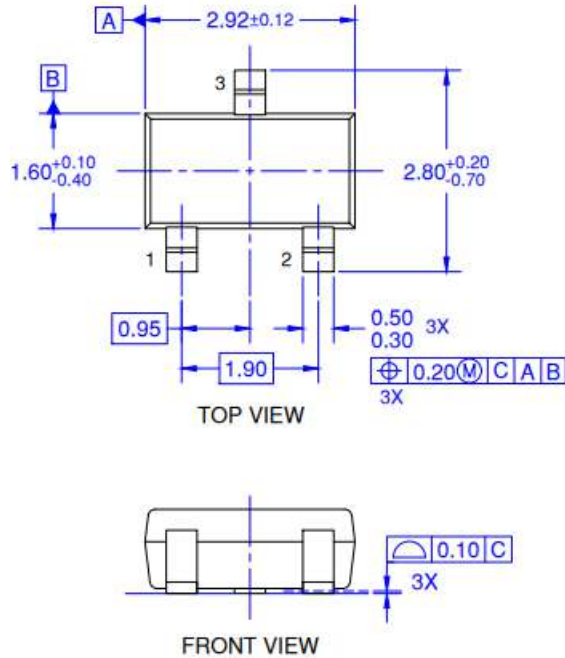


**Figure 4. Power Derating**



**PACKAGE OUTLINE DIMENSIONS**

SOT-23



- A8** = Device Code
- 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

- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
  3. PACKAGE OUTLINE REFERENCE: JEDEC TO-236, ISSUE H, VARIATION AA.
  4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
  5. DWG NO REF: HQ2SD07-025 REV A.

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

