400V High Voltage NPN Transistor

FEATURES

- Epitaxial Planar Type
- NPN Silicon Transistor
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

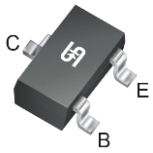
APPLICATION

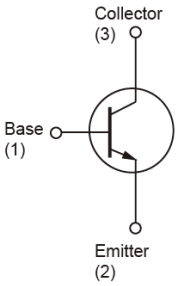
- Consumer electronics
- High voltage switching
- High voltage driver

KEY PERFORMANCE PARAMETERS			
PARAMETER		**VALUE**	**UNIT**
BV_{CBO}		400	V
BV_{CEO}		400	V
I_C		300	mA
$V_{CE(SAT)}$	I_C=10mA, I_B=1mA	0.1	V

Pb-Free RoHS COMPLIANT HALOGEN FREE

SOT-23





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

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Collector-Base Voltage	V_{CBO}	400	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current (DC)	I_C	300	mA
Power Total Dissipation @ T_A=25ºC	P_D	0.225	W
Maximum Operating Junction Temperature	T_J	+150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Note: Single pulse, Pw ≤ 380μs, Duty ≤ 2%

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
Junction to Ambient Thermal Resistance	$R_{\Theta JA}$	556	°C/W
Junction to Case Thermal Resistance	$R_{\Theta JC}$	185	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**UNIT**
Static (Note 1)						
Collector-Base Breakdown Voltage	I_C =50uA, I_E =0	BV_{CBO}	400	--	--	V
Collector-Emitter Breakdown Voltage	I_C =1mA, I_B =0	BV_{CEO}	400	--	--	V
Emitter-Base Breakdown Voltage	I_E =50uA, I_C =0	BV_{EBO}	6	--	--	V
Collector Cutoff Current	V_{CB} =400V, I_E =0	I_{CBO}	--	--	10	μA
Collector-Emitter Reverse Current	V_{CE} = 300V, R_{EB} =4kΩ	I_{CER}	--	--	20	nA
Emitter Cutoff Current	V_{EB} =6V, I_C =0	I_{EBO}	--	--	10	μA
Collector-Emitter Saturation Voltage	I_C =10mA, I_B =1mA	$V_{CE(SAT)}$	--	0.1	0.5	V
Base-Emitter Saturation Voltage	I_C =10mA, I_B =1mA	$V_{BE(SAT)}$	--	--	1.5	V
DC Current Transfer Ratio	V_{CE} =10V, I_C =10mA	h_{FE}	100	--	270	
Dynamic (Note 2)						
Transition Frequency	V_{CE} =10V, I_C=-10mA, f=10MHz	f_T	--	20	--	MHz
Output Capacitance	V_{CB} =10V, I_E=0, f=1MHz	C_{ob}	--	7	--	pF

Note:

1. Pulse test: ≤380μs, duty cycle ≤2%
2. For DESIGN AID ONLY, not subject to production testing

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSC4505CX RFG	SOT-23	3,000pcs / 7” Reel

ELECTRICAL CHARACTERICS CURVES (T_A=25°C, unless otherwise noted)

Figure 1. DC Current Gain

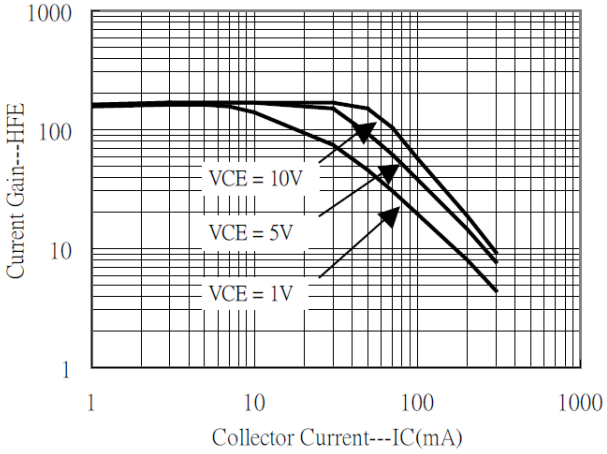


Figure 2. $V_{CE(SAT)}$ v.s. Ic

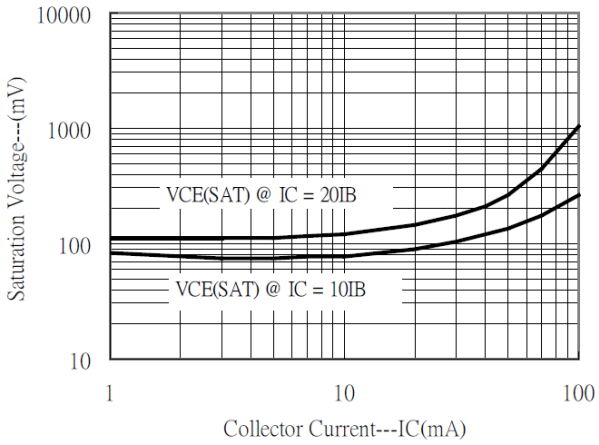


Figure 3. $V_{BE(SAT)}$ v.s. Ic

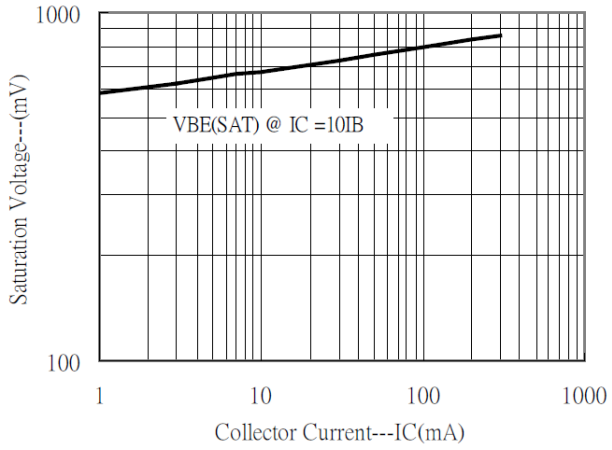


Figure 4. Power Derating Curve

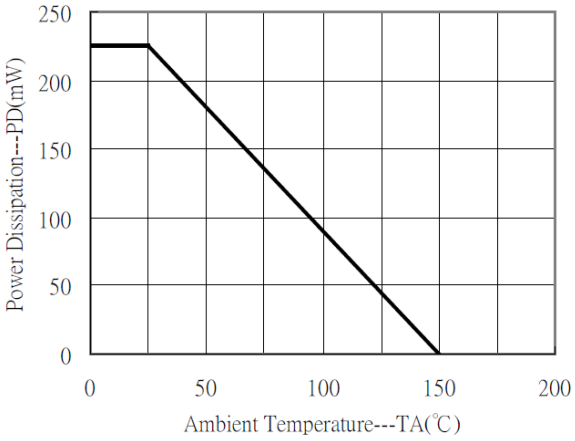
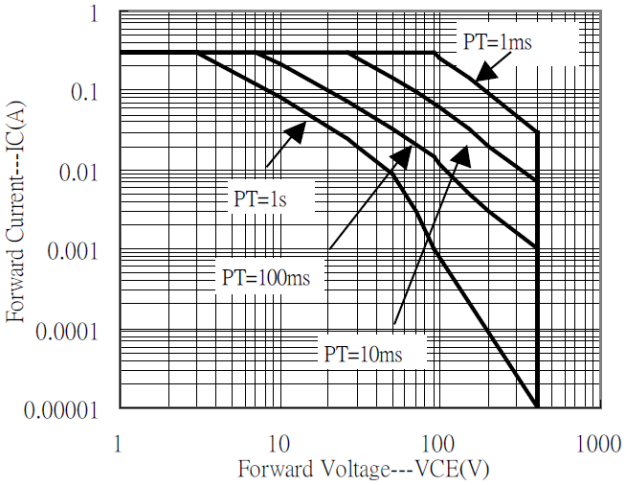
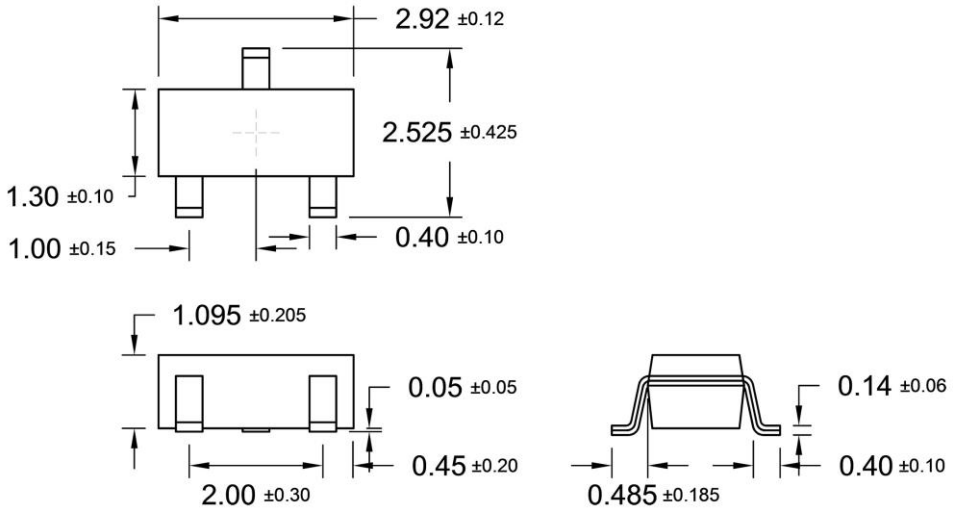


Figure 5. Safe Operating Area

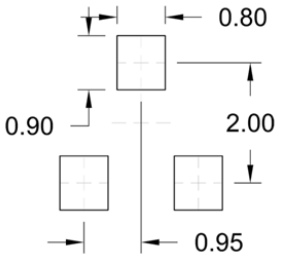


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

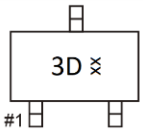
SOT-23



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



3D = Device Code

x = Year Code

7=2017, 8=2018, 9=2019, 0=2020……..

x = Month Code

1	=Jan	**2**	=Feb	**3**	=Mar	**4**	=Apr
5	=May	**6**	=Jun	**7**	=Jul	**8**	=Aug
9	=Sep	**A**	=Oct	**B**	=Nov	**C**	=Dec