300V High Performance 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

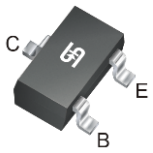
APPLICATION

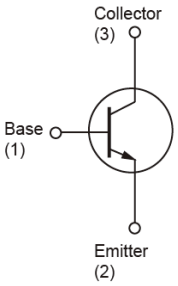
- Consumer electronics
- High voltage switching
- High voltage driver

KEY PERFORMANCE PARAMETERS			
PARAMETER		**VALUE**	**UNIT**
BV_{CBO}		300	V
BV_{CEO}		300	V
I_C		500	mA
$V_{CE(SAT)}$	I_C=100mA, I_B=10mA	0.2	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}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	500	mA
Collector Peak Current (Pulse) Note	I_{CM}	1	A
Base Current	I_B	200	mA
Power Total Dissipation @ T_A=25ºC	P_D	0.5	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	$R_{\Theta JA}$	420	°C/W
Junction to Case Thermal Resistance	$R_{\Theta JC}$	155	°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 = 100μA	BV_{CBO}	300	--	--	V
Collector-Emitter Breakdown Voltage	I_C = 10mA	BV_{CEO}	300	--	--	V
Emitter-Base Breakdown Voltage	I_E = 100μA	BV_{EBO}	5	--	--	V
Collector Cutoff Current	V_{CB} = 250V	I_{CBO}	--	--	100	nA
Collector Cutoff Current	V_{CES} = 250V	I_{CES}	--	--	100	nA
Emitter Cutoff Current	V_{EB} = 4V	I_{EBO}	--	--	100	nA
Collector-Emitter Saturation Voltage	I_C=100mA, I_B =10mA	$V_{CE(SAT)}^1$	--	--	0.2	V
	I_C=250mA, I_B =25mA	$V_{CE(SAT)}^2$	--	--	0.3	V
Base-Emitter Saturation Voltage	I_C=250mA, I_B =25mA	$V_{BE(SAT)}$	--	--	1	V
Base-Emitter Turn-on Voltage	I_C=250mA, V_{CE} =10V	$V_{BE(ON)}$	--	--	1	V
DC Current Transfer Ratio	V_{CE} =10V, I_C=1mA,	h_{FE}^1	100	--	--	
	V_{CE} =10V, I_C=100mA,	h_{FE}^2	80	--	300	
	V_{CE} =10V, I_C=250mA,	h_{FE}^3	20	--	--	
Dynamic (Note 2)						
Transition Frequency	V_{CE} =-10V, I_C=-30mA, f=100MHz	f_T	75	--	--	MHz
Collector Output Capacitance	V_{CB} =-10V, I_E=0A, f=100MHz	C_{ob}	--	--	5	pF
Delay Time	V_{CC}=100V, I_C=100mA, I_{B1}=-I_{B2}=10mA	t_d	--	53	--	ns
Rise Time		t_r	--	126	--	ns
Storage Time		t_s	--	2580	--	ns
Fall Time		t_f	--	228	--	ns

Note:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSC497CX RFG	SOT-23	3,000pcs / 7” Reel

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

Figure 1. $V_{CE(sat)}$ vs. Collector Current

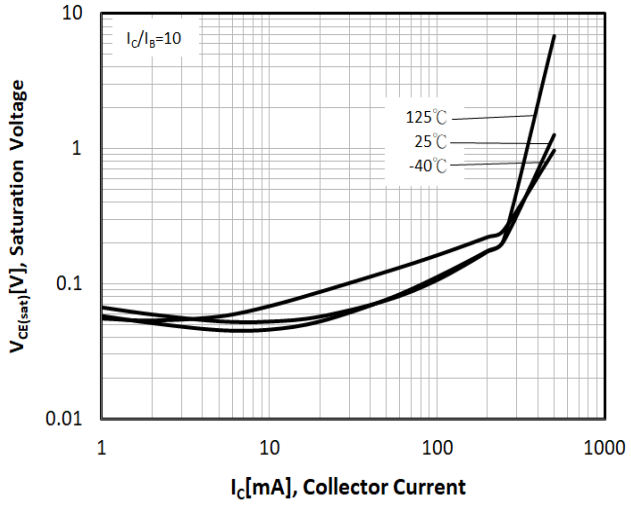


Figure 2. DC Current Gain

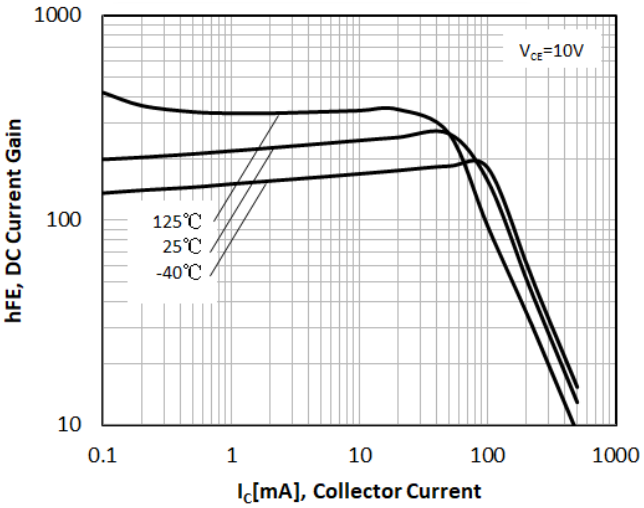


Figure 3. $V_{BE(sat)}$ vs. Collector Current

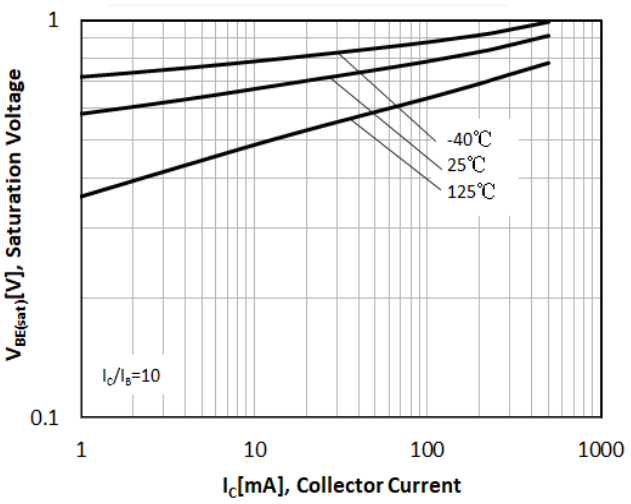


Figure 4. $V_{BE(on)}$ vs. Collector Current

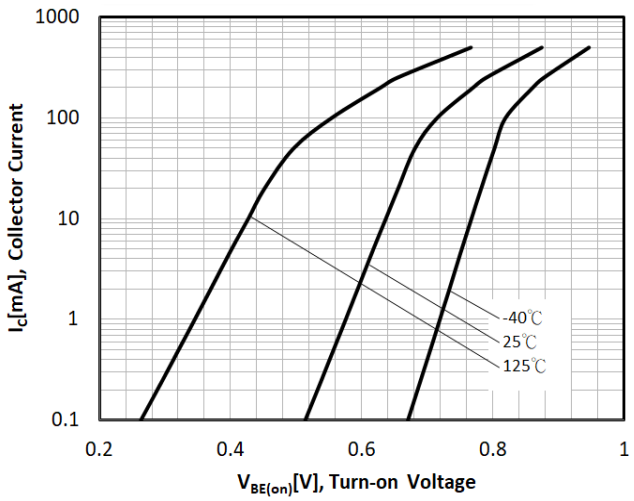
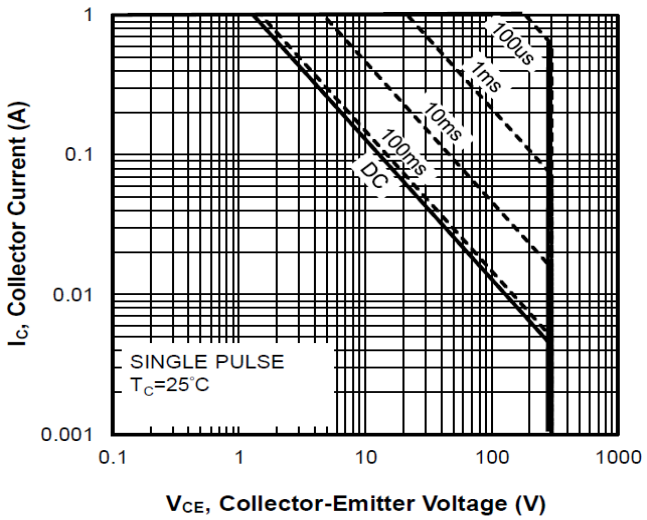
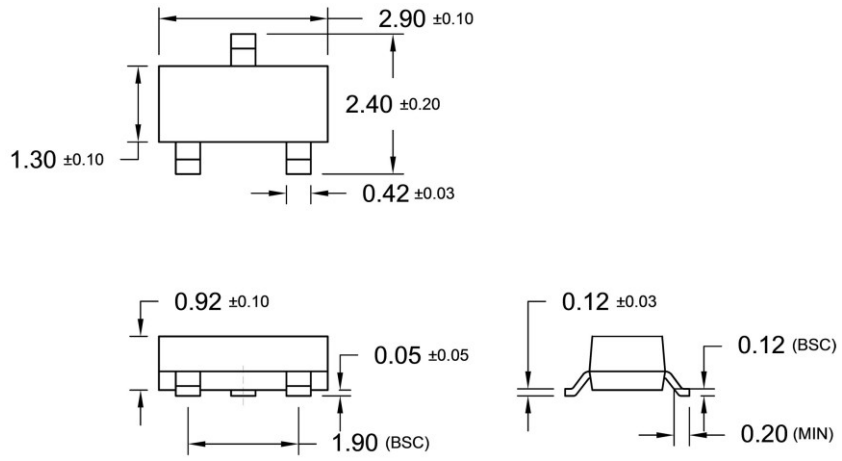


Figure 5. Safe Operating Area

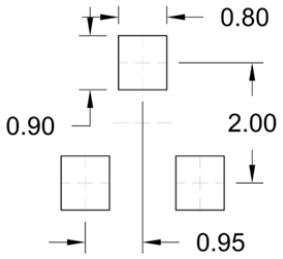


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

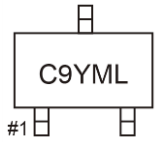
SOT-23



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



C9 = 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 (1~9, A~Z)

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