SILICON POWER TRANSISTOR 2SC4553

NPN SILICON EPITAXIAL TRANSISTOR FOR HIGH-SPEED SWITCHING

The 2SC4553 is a power transistor designed especially for low collector saturation voltage and features large current switching at a low power dissipation. In addition, a high h_{FE} enables alleviation of the driver load.

FEATURES

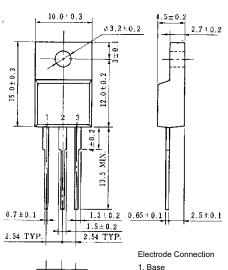
NEC

- High hFE and low VCE(sat): hFE ≅ 800 (VCE = 2 V, IC = 3 A) VCE(sat) ≅ 0.12 V (IC = 3 A, IB = 0.03 A)
- On-chip C to E damper diode
- Mold package that does not require an insulating board or insulation bushing

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C) Parameter Symbol Ratings Unit Collector to base voltage v Vсво 100 Collector to emitter voltage VCEO 100 v v Emitter to base voltage Vево 7.0 Collector current (DC) ±7.5 А C(DC) Collector current (pulse) C(pulse)* ±10 А Base current (DC) B(DC) 2.0 Α P⊤ (Tc = 25°C) 30 W Total power dissipation Total power dissipation P⊤ (Ta = 25°C) 2.0 W 150 °C Junction temperature Τi Tstg -55 to +150 °C Storage temperature

* PW \leq 10 ms, duty cycle \leq 50%

PACKAGE DRAWING (UNIT: mm)





1. Base 2. Collector 3. Emitter

EQUIVALENT CIRCUIT

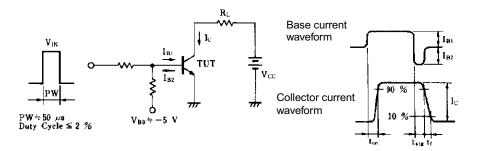


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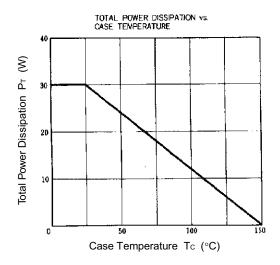
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

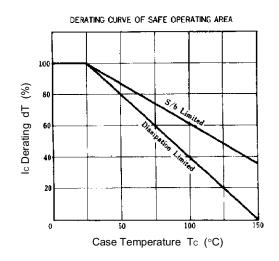
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	Ісво	V _{CB} = 100 V, I _E = 0			10	μA
Emitter cutoff current	Іево	V _{EB} = 5.0 V, I _C = 0			17	mA
DC current gain	hfe1	Vce = 2.0 V, Ic = 3.0 A	450	800	2,000	
DC current gain	hfe2	Vce = 2.0 V, Ic = 5.0 A	150			
Collector saturation voltage	VCE(sat)1	Ic = 3.0 A, Iв = 60 mA			0.2	V
Collector saturation voltage	VCE(sat)2	Ic = 3.0 A, Iв = 30 mA		0.12	0.3	V
Collector saturation voltage	VCE(sat)3	Ic = 5.0 A, Iв = 100 mA			0.4	V
Collector saturation voltage	VCE(sat)4	Ic = 5.0 A, Iв = 50 mA			0.55	V
Base saturation voltage	VBE(sat)	Ic = 5.0 A, Iв = 50 mA			1.2	V
Gain bandwidth product	f⊤	Vce = 5.0 V, Ic = 0.5 A		100		MHz
Collector capacitance	Cob	V _{CB} = 10 V, I _E = 0, f = 1 MHz		110		pF
Turn-on time	ton	$\label{eq:lc} \begin{array}{l} I_{\rm C}=5.0 \text{ A}, \text{ R}_{\rm L}=3.0 \ \Omega, \\ I_{\rm B1}=-I_{\rm B2}=100 \text{ mA}, \text{ V}_{\rm CC}\cong 16 \text{ V} \\ \end{array}$ Refer to the test circuit.		0.5		μs
Storage time	tstg			2.0		μs
Fall time	tr			0.5		μs
Diode forward voltage	VDF	I _{DF} = 5.0 A		1.4		V

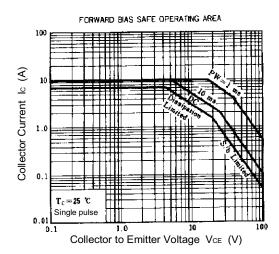
SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT

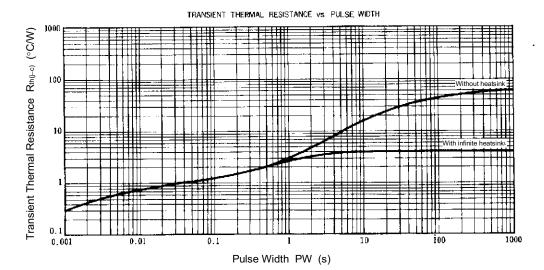


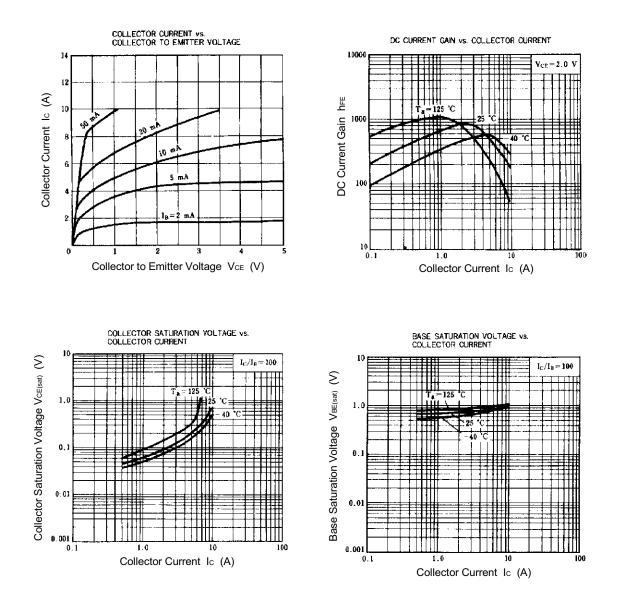
TYPICAL CHARACTERISTICS (Ta = 25°C)











[MEMO]

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