

NPN SILICON POWER TRANSISTOR 2SC2752

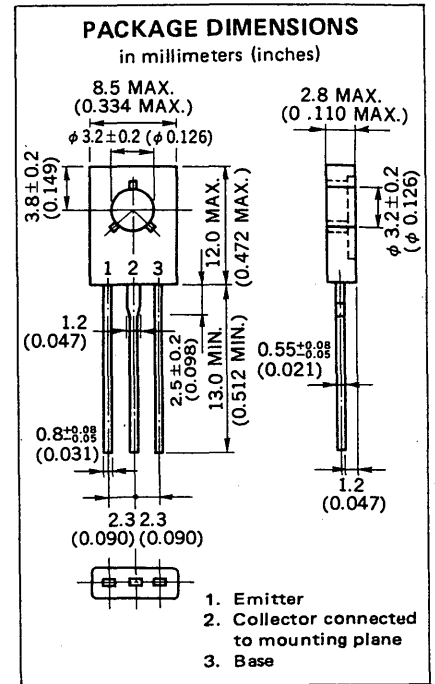
DESCRIPTION The 2SC2752 is suitable for Low Power Switching regulator, DC-DC converter and High Voltage Switch.

- FEATURES**
- High Breakdown Voltage.
 - Low Collector Saturation Voltage.
 - High Speed Switching.
 - Complementary to the NEC 2SA1156 PNP Transistor.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures		
Storage Temperature	.....	-55 to +150 °C
Junction Temperature	.....	+150 °C Maximum
Maximum Power Dissipations		
Total Power Dissipation (T _a = 25 °C)	.....	1.0 W
Total Power Dissipation (T _c = 25 °C)	.....	10 W
Maximum Voltages and Currents (T_a = 25 °C)		
V _{CB0}	Collector to Base Voltage	..... 500 V
V _{CEO}	Collector to Emitter Voltage	..... 400 V
V _{EBO}	Emitter to Base Voltage	..... 7.0 V
I _{C(DC)}	Collector Current	..... 0.5 A
I _{C(pulse)} *	Collector Current	..... 1.0 A
I _{B(DC)}	Base Current	..... 0.25 A

* PW ≤ 10 ms, Duty Cycle ≤ 50 %



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h _{FE1} *	DC Current Gain	20		80	—	V _{CE} = 5.0 V, I _C = 0.05 A
h _{FE2} *	DC Current Gain	10			—	V _{CE} = 5.0 V, I _C = 0.3 A
t _{on}	Turn On Time			1.0	μs	(I _C = 0.3 A, I _{B1} = -I _{B2} = 0.06 A, PW ≅ 50 μs R _L = 500 Ω, V _{CC} ≅ 150 V)
t _{stg}	Storage Time			2.5	μs	
t _f	Fall Time			1.0	μs	
V _{ECO(sus)}	Collector to Emitter Sustaining Voltage	400			V	Table 1, I _C = 0.3 A, I _{B1} = 0.06 A, L = 10 mH
V _{CEX(sus)1}	Collector to Emitter Sustaining Voltage	450			V	(Table 1, I _C = 0.3 A, I _{B1} = -I _{B2} = 0.06 A V _{clamp} = Rated V _{CEX} , T _a = 125 °C, L = 10 mH)
V _{CEX(sus)2}	Collector to Emitter Sustaining Voltage	400			V	(Table 1, I _C = 0.6 A, I _{B1} = 0.2 A, I _{B2} = -0.06 A V _{clamp} = Rated V _{CEX} , T _a = 125 °C, L = 10 mH)
I _{CER}	Collector Cutoff Current			1.0	mA	V _{CE} = 400 V, R _{BE} = 51 Ω, T _a = 125 °C
I _{CEX1}	Collector Cutoff Current			10	μA	V _{CE} = 400 V, V _{BE(OFF)} = -1.5 V
I _{CEX2}	Collector Cutoff Current			1.0	mA	(V _{CE} = 400 V, V _{BE(OFF)} = -1.5 V, T _a = 125 °C)
I _{EBO}	Emitter Cutoff Current			10	μA	V _{EB} = 5.0 V, I _C = 0
V _{CE(sat)} *	Collector Saturation Voltage			1.0	V	I _C = 0.3 A, I _B = 0.06 A
V _{BE(sat)} *	Base Saturation Voltage			1.2	V	I _C = 0.3 A, I _B = 0.06 A

* Pulsed / PW ≅ 350 μs, Duty Cycle ≅ 2 %

Classification of h_{FE1}

Rank	M	L	K
Range	20 to 40	30 to 60	40 to 80

Test Conditions: V_{CE} = 5.0 V, I_C = 0.05 A

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

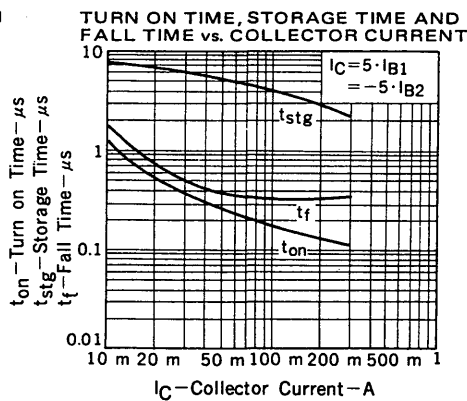
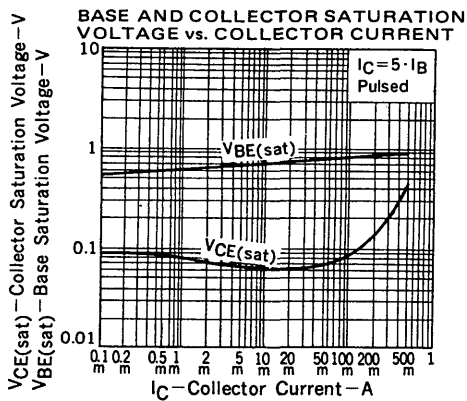
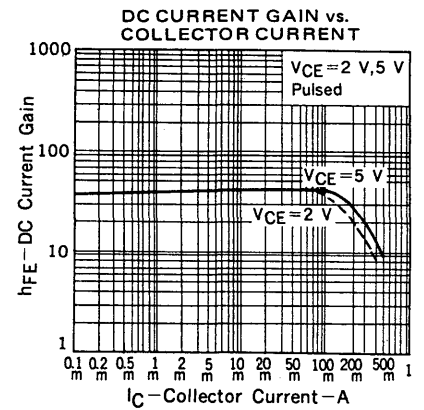
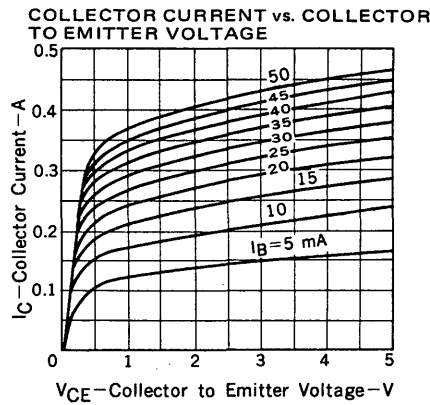
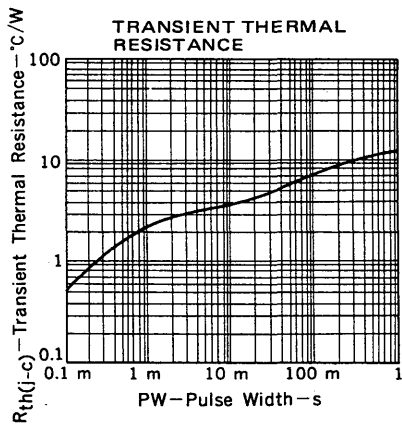
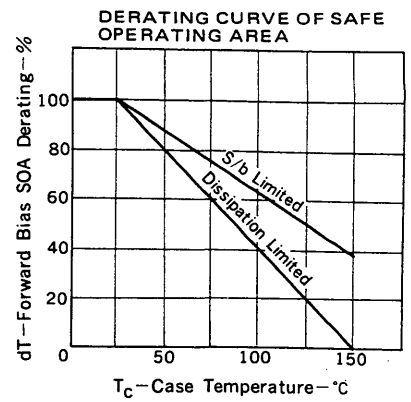
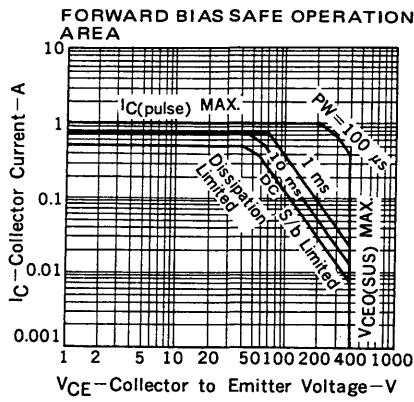
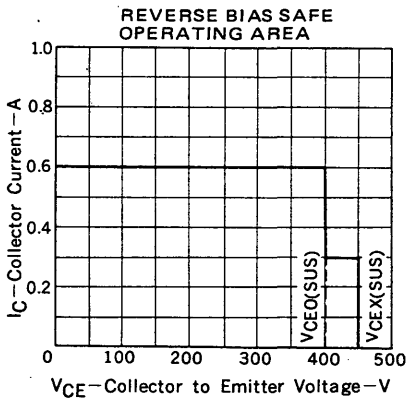


TABLE 1. — TEST CONDITIONS FOR DYNAMIC PERFORMANCE

	V _{CEO} (SUS)	V _{CEX} (SUS)	RESISTIVE SWITCHING
INPUT CONDITIONS	<p>PW Varied to Attain I_C = 10 A</p>	<p>PW Varied to Attain I_C = 10 A Duty Cycle ≤ 2% Q₁ = 2SA959</p>	
CIRCUIT VALUES	<p>L_{coil} = 10 mH, V_{CC} = 10 V R_{coil} ≤ 0.5 Ω V_{clamp} (Unclamped)</p>	<p>L_{coil} = 10 mH, V_{CC} = 20 V R_{coil} ≤ 0.5 Ω V_{clamp} = Rated V_{CEX} Value</p>	<p>R_L = 500 Ω, V_{CC} ≈ 150 V</p>
TEST CIRCUITS	<p>INDUCTIVE TEST CIRCUIT</p>	<p>OUTPUT WAVEFORM</p> <p> $t_1 = \frac{L_{coil} (I_C \text{ pk})}{V_{CC}}$ $t_2 = \frac{L_{coil} (I_C \text{ pk})}{V_{clamp}}$ </p> <p>t₁ Adjust to Obtain I_C</p>	<p>RESISTIVE TEST CIRCUIT</p>