



SANYO Semiconductors

DATA SHEET

SPA13003

(13003 series)

NPN Triple Diffused Planar Silicon Transistor

Switching Regulator Applications

Features

- High breakdown voltage.
- High-speed switching.
- Wide ASO.
- Adoption of MBIT process.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		700	V
Collector-to-Emitter Voltage	VCEs		700	V
Collector-to-Emitter Voltage	VCEO		400	V
Emitter-to-Base Voltage	VEBO		8	V
Collector Current	IC		1	A
Collector Current (Pulse)	ICP	PW≤300μs, duty cycle≤10%	2	A
Base Current	IB		0.5	A
Collector Dissipation	PC		0.6	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =400V, I _E =0A			10	μA
Emitter Cutoff Current	IEBO	V _{EB} =5V, I _C =0A			10	μA
DC Current Gain	h _{FE1}	V _{CE} =5V, I _C =0.1A	15		35	
	h _{FE2}	V _{CE} =5V, I _C =0.5A	5			
	h _{FE3}	V _{CE} =5V, I _C =1mA	7			

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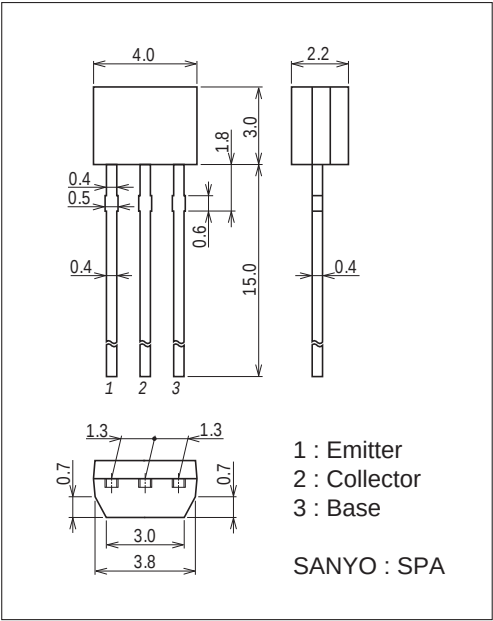
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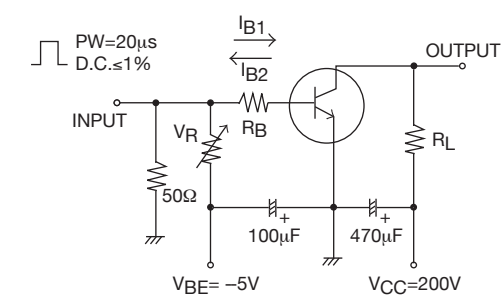
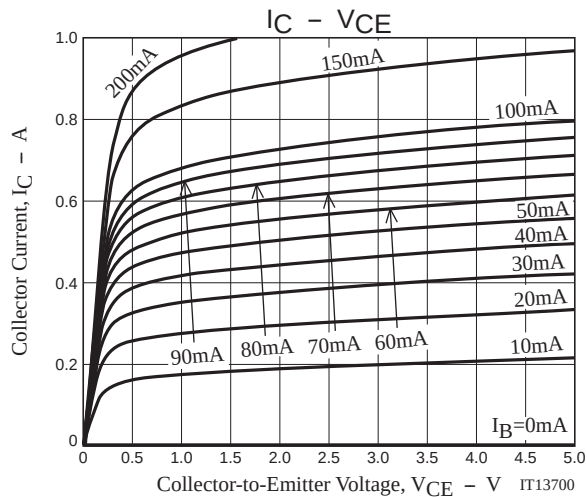
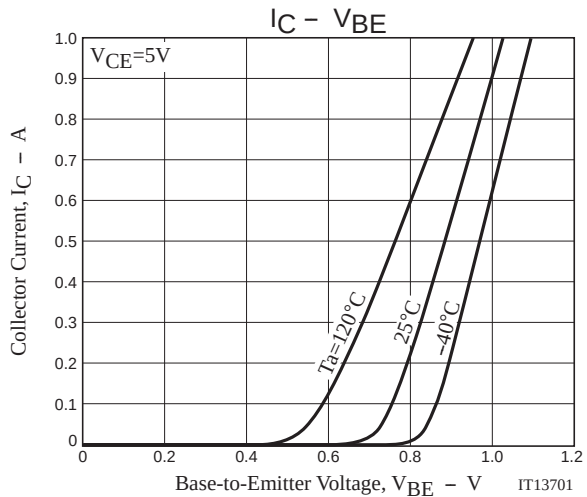
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=0.1A$		20		MHz
Output Capacitance	Cob	$V_{CB}=10V, f=1MHz$		10		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=0.5A, I_B=0.1A$			0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=0.5A, I_B=0.1A$			0.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0A$	700			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=0\Omega$	700			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0A$	8			V
Turn-On Time	t_{on}	$I_C=0.5A, I_{B1}=0.05A, I_{B2}=-0.5A, R_L=400\Omega, V_{CC}=200V$			1.0	μs
Storage Time	t_{stg}	$I_C=0.5A, I_{B1}=0.05A, I_{B2}=-0.5A, R_L=400\Omega, V_{CC}=200V$			1.0	μs
Fall Time	t_f	$I_C=0.5A, I_{B1}=0.05A, I_{B2}=-0.5A, R_L=400\Omega, V_{CC}=200V$			0.3	μs

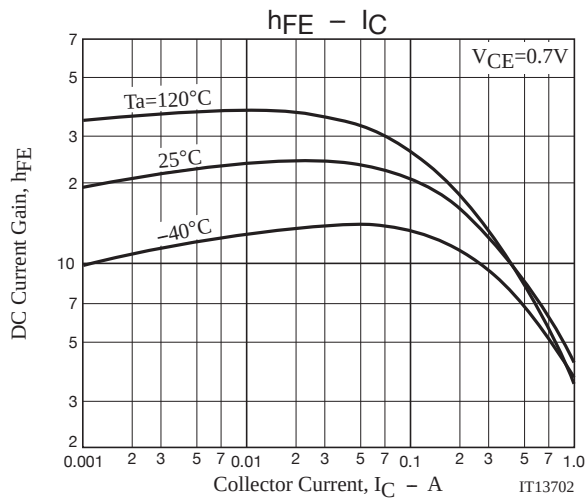
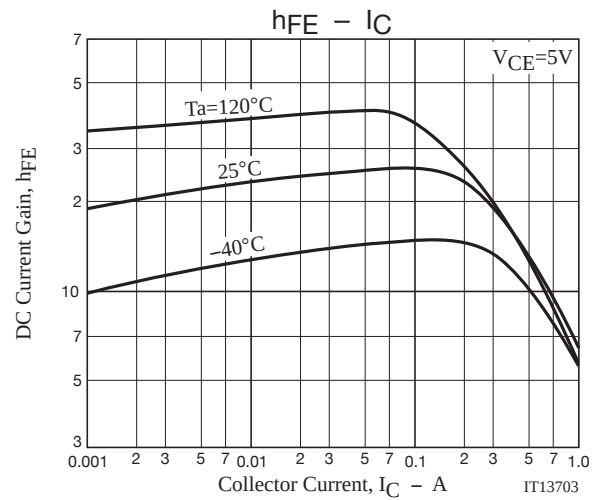
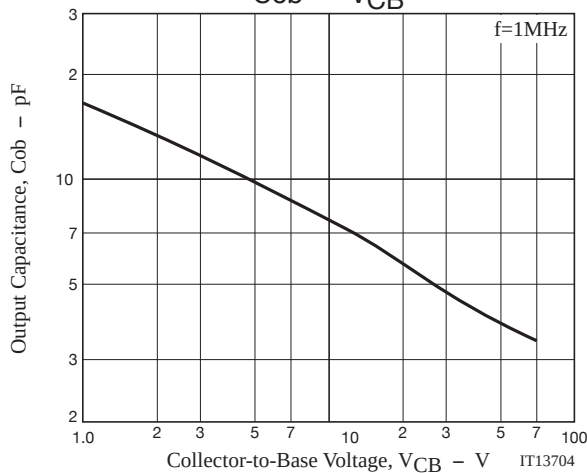
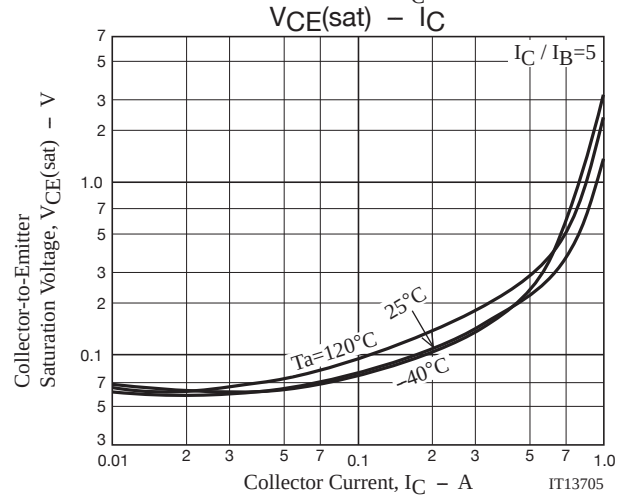
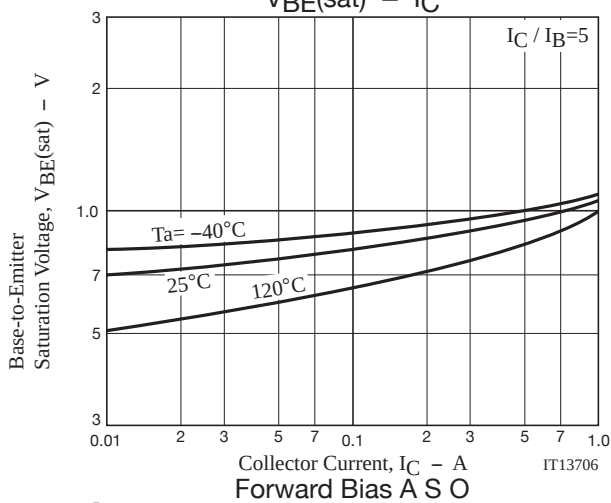
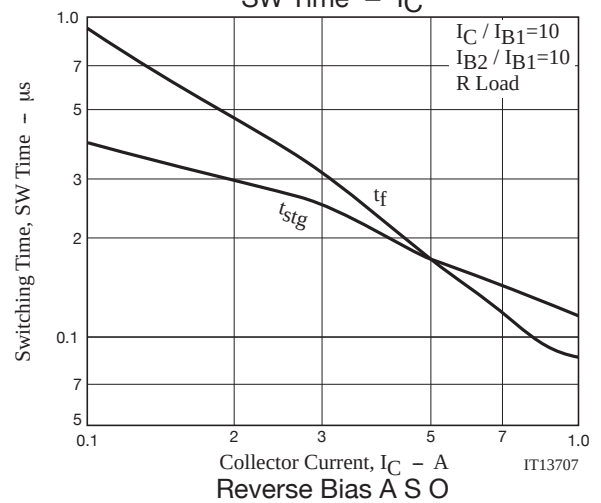
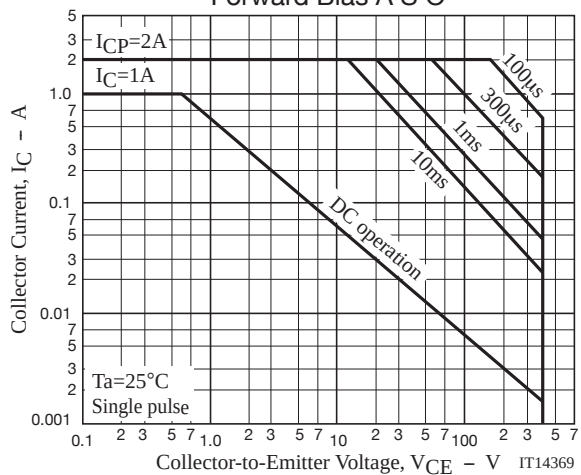
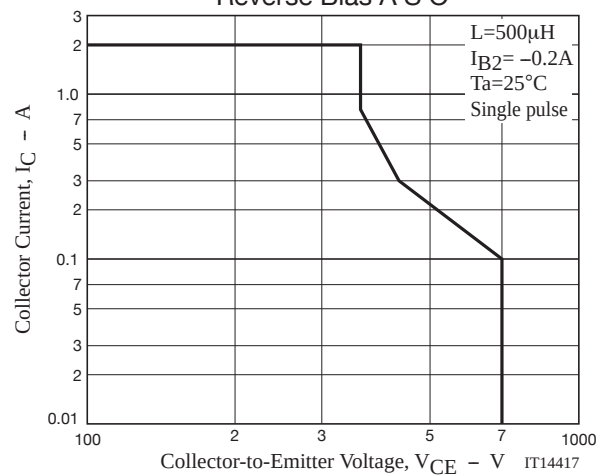
Package Dimensions

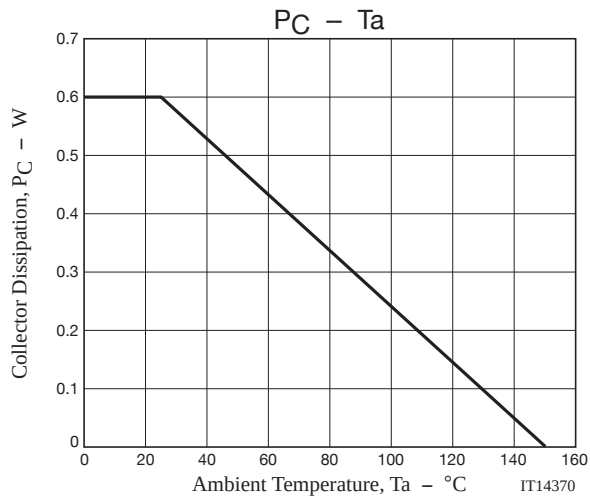
unit : mm (typ)
7524-004



Switching Time Test Circuit







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