

NPN Triple Diffused Planar Silicon Transistor

2SC3153



800V/6A Switching Regulator Applications

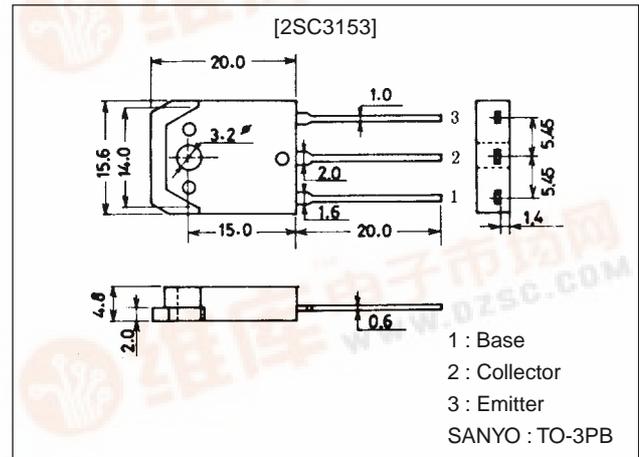
Features

- High breakdown voltage ($V_{CBO} \geq 900V$).
- Fast switching speed.
- Wide ASO.

Package Dimensions

unit:mm

2022A



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		900	V
Collector-to-Emitter Voltage	V_{CEO}		800	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		6	A
Collector Current (Pulse)	I_{CP}	Pulse, $PW \leq 300\mu s$, Duty Cycle $\leq 10\%$	20	A
Base Current	I_B		3	A
Collector Dissipation	P_C	$T_c = 25^\circ C$	100	W
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Electrical Characteristics at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = 800V, I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			10	μA
DC Current Gain	h_{FE1}	$V_{CE} = 5V, I_C = 0.4A$	10*		40*	
	h_{FE2}	$V_{CE} = 5V, I_C = 2A$	8			
Gain-Bandwidth Product	f_T	$V_{CE} = 10V, I_C = 0.4A$		15		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10V, f = 1MHz$		120		pF

* : For the h_{FE1} of the 2SC3153, specify two ranks or more in principle.

10	K	20	15	L	30	20	M	40
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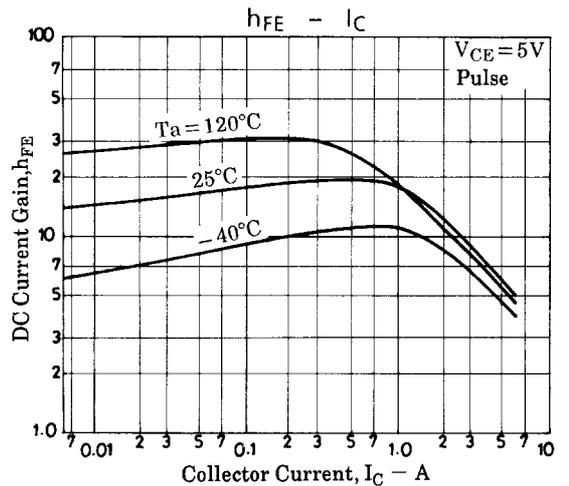
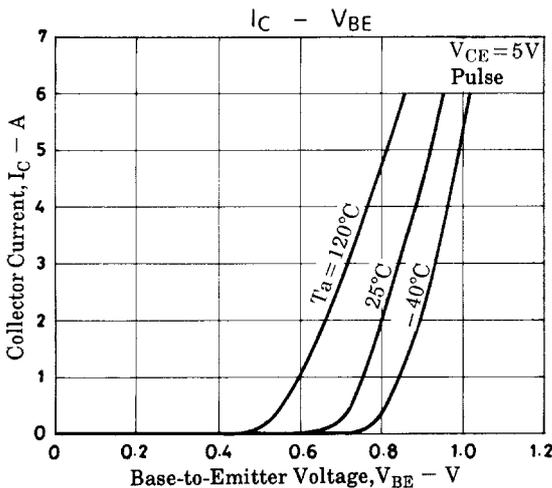
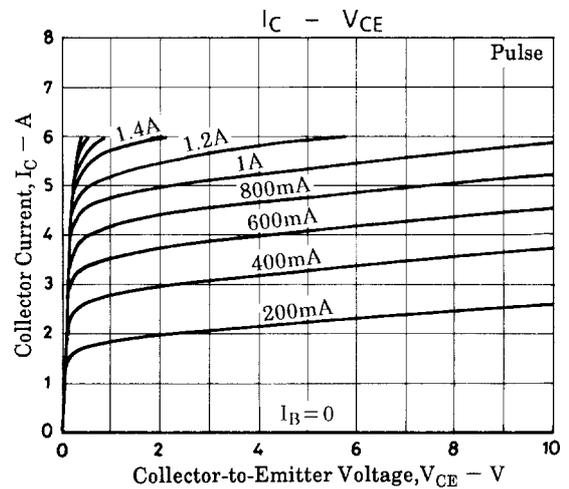
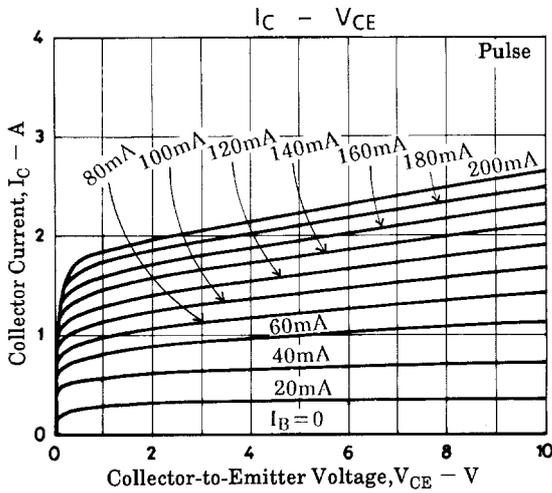
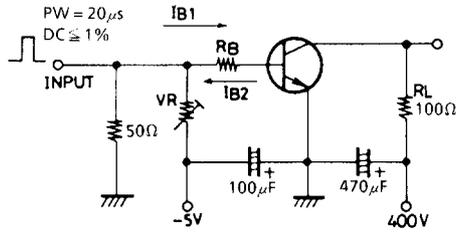
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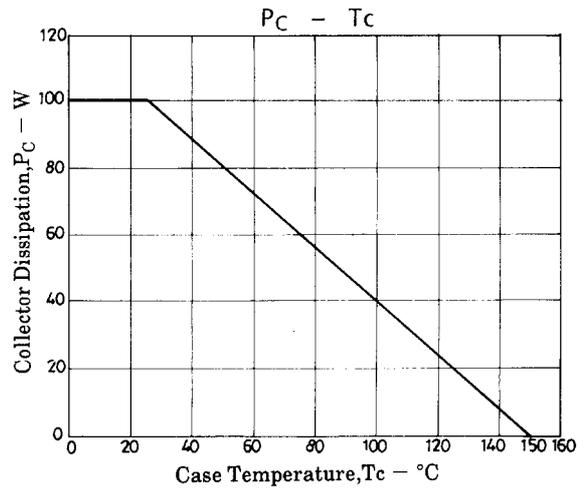
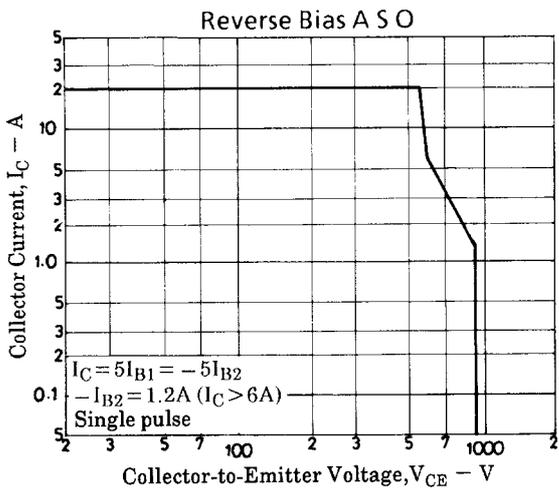
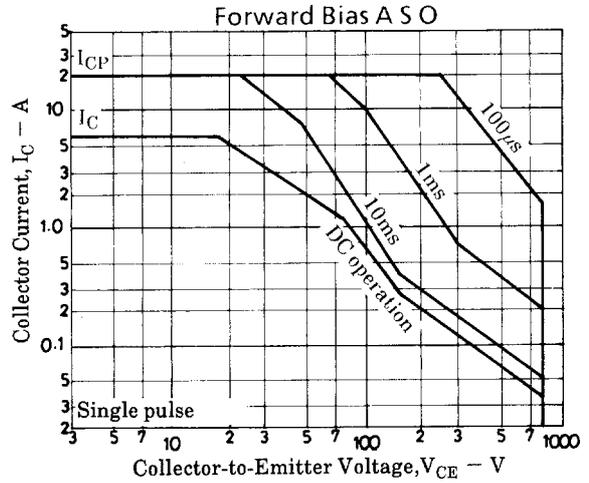
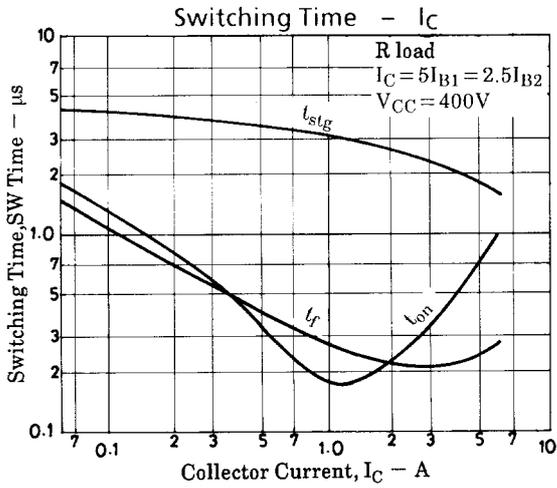
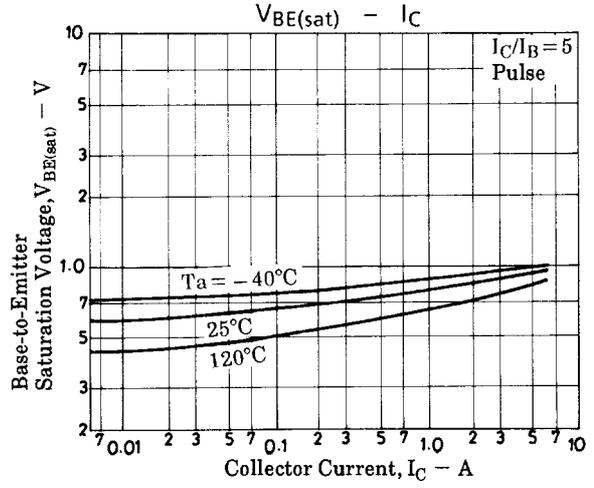
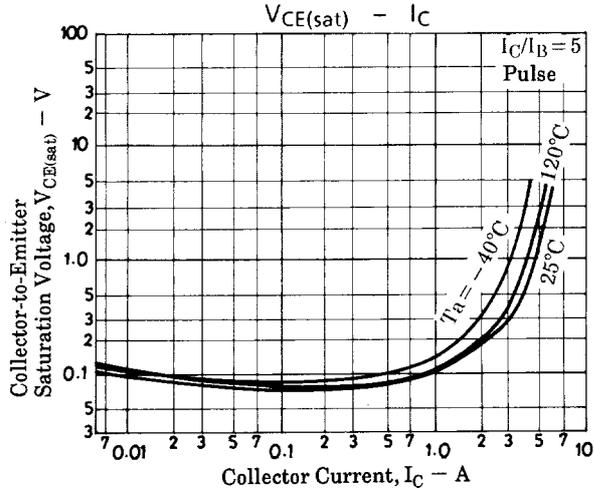
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3A, I_B=0.6A$			2.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=3A, I_B=0.6A$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	900			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	800			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEO(sus)}$	$I_C=6A, L=200\mu H, I_B=2A$	800			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)1}$	$I_C=2A, I_{B1}=0.4A, I_{B2}=-0.4A, L=1mH, \text{clamped}$	800			V
	$V_{CEX(sus)2}$	$I_C=1A, I_{B1}=0.2A, I_{B2}=-0.2A, L=2mH, \text{clamped}$	900			V
Turn-ON Time	t_{on}	$I_C=4A, I_{B1}=0.8A, I_{B2}=-1.6A, R_L=100\Omega, V_{CC}=400V$			1.0	μs
Storage Time	t_{stg}	$I_C=4A, I_{B1}=0.8A, I_{B2}=-1.6A, R_L=100\Omega, V_{CC}=400V$			3.0	μs
Fall Time	t_f	$I_C=4A, I_{B1}=0.8A, I_{B2}=-1.6A, R_L=100\Omega, V_{CC}=400V$			0.7	μs

Switching Time Test Circuit



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