

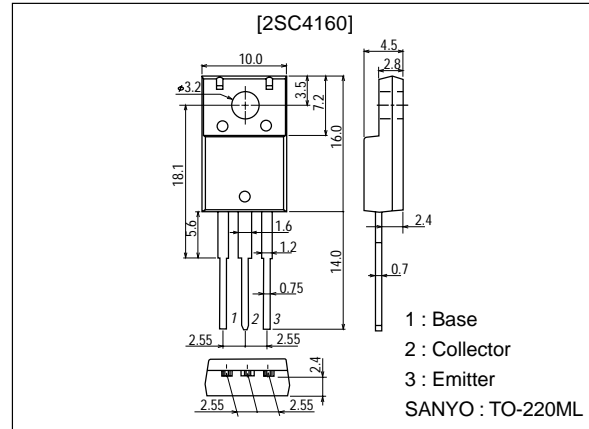
SANYO**2SC4160****400V/4A Switching Regulator Applications****Features**

- High breakdown voltage.
- High reliability.
- Fast switching speed ($t_f=0.1\mu s$ typ).
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		500	V
Collector-to-Emitter Voltage	V_{CEO}		400	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		4	A
Collector Current (Pulse)	I_{CP}	$PW \leq 300\mu s$, duty cycle $\leq 10\%$	8	A
Base Current	I_B		1.5	A
Collector Dissipation	P_C		2	W
		$T_c = 25^\circ C$	25	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}	$V_{CB}=400V$, $I_E=0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5V$, $I_C=0$			10	μA
DC Current Gain	h_{FE1}^*	$V_{CE}=5V$, $I_C=0.4A$	15		50	
	h_{FE2}	$V_{CE}=5V$, $I_C=2A$	10			
	h_{FE3}	$V_{CE}=5V$, $I_C=10mA$	10			

*: The h_{FE1} of the 2SC4160 is classified as follows.

Continued on next page.

When specifying the h_{FE1} rank, specify two or more ranks in principle.

Rank	L	M	N
h_{FE}	15 to 30	20 to 40	30 to 50

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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

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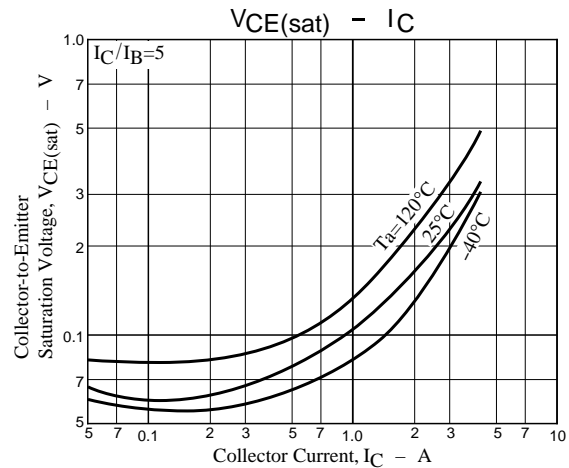
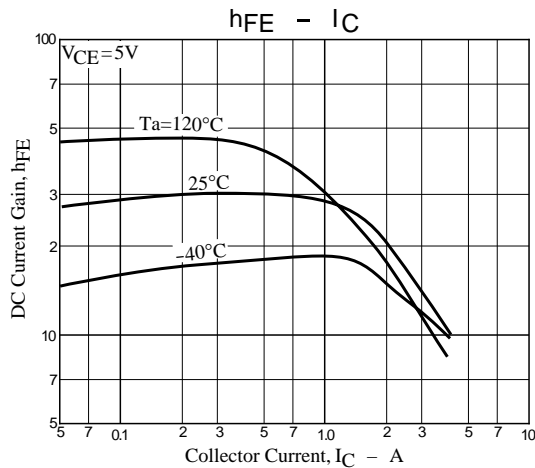
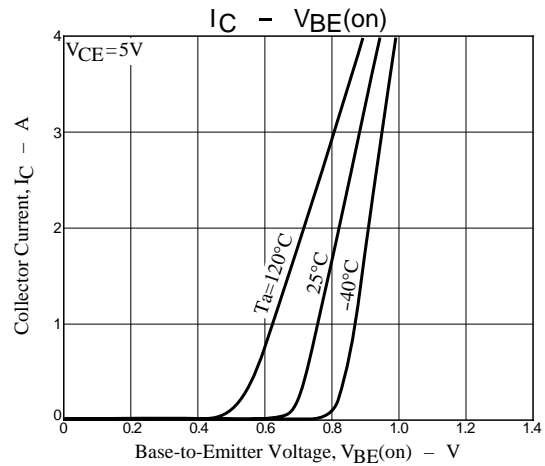
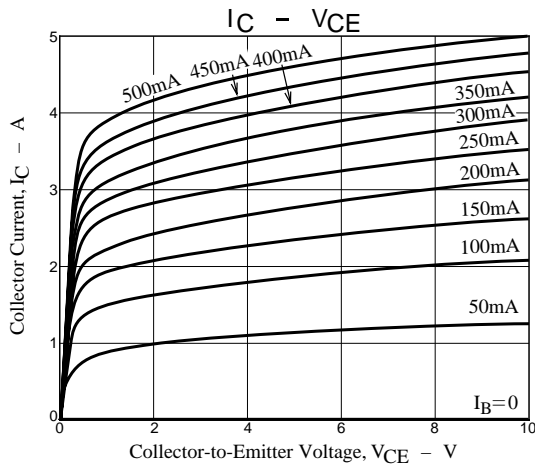
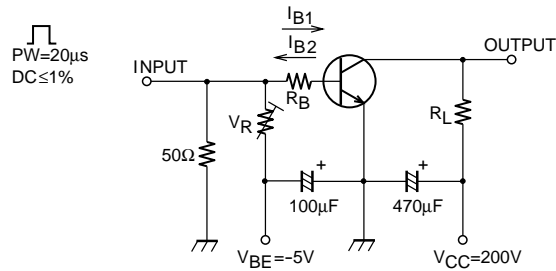
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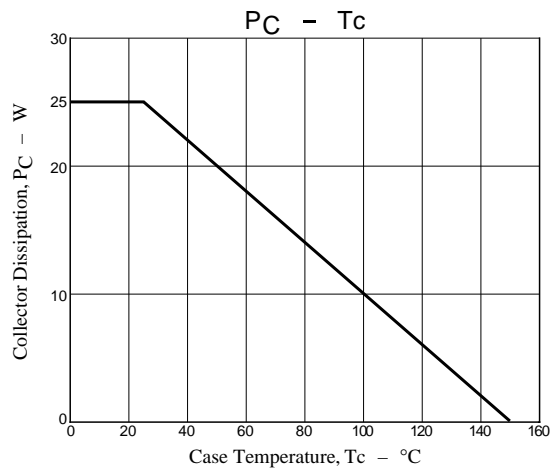
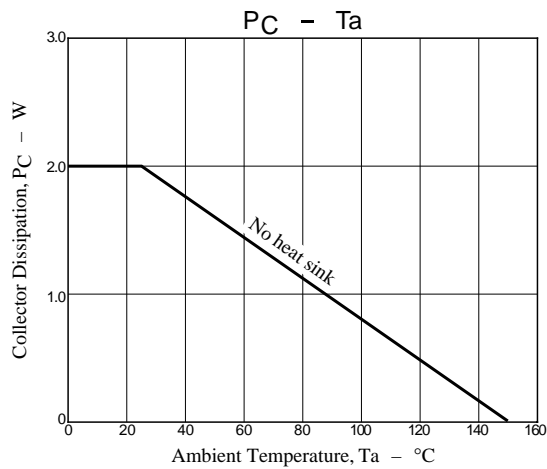
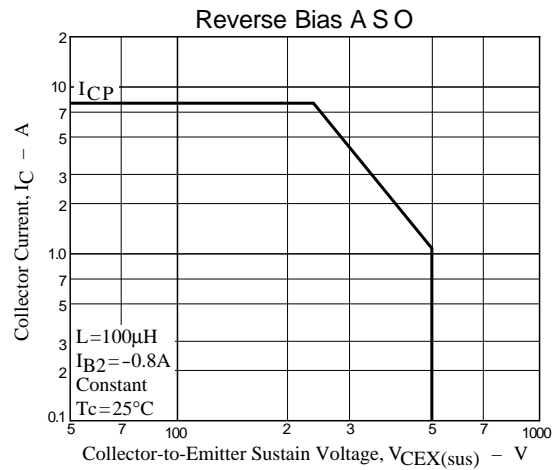
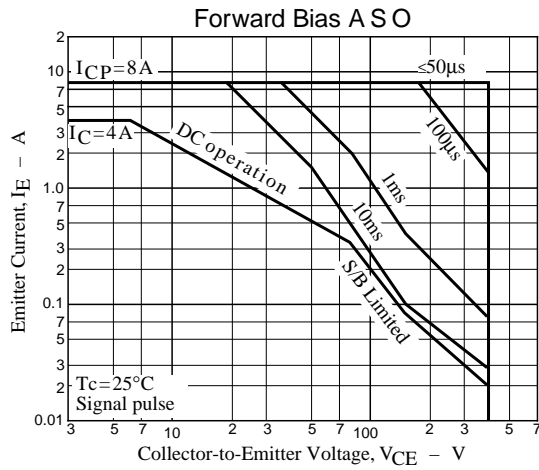
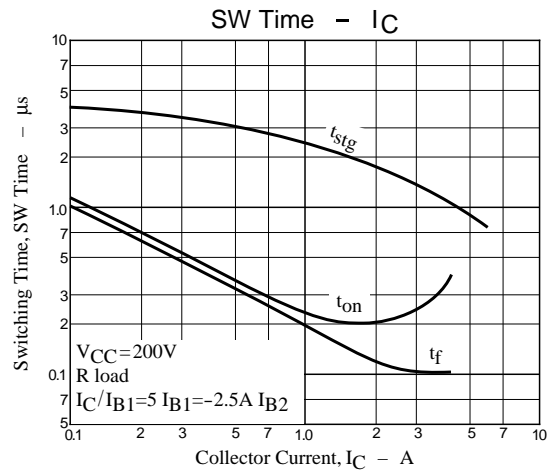
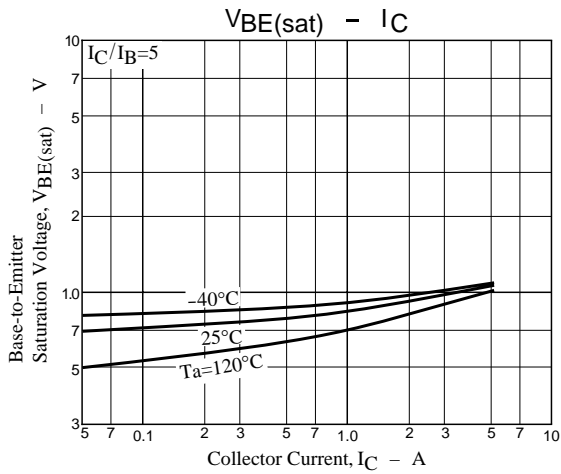
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=0.4A$		20		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		50		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2A, I_B=0.4A$			0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=2A, I_B=0.4A$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	500			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	$I_C=2A, I_{B1}=0.2A, I_{B2}=-0.8A, L=1mH, \text{clamped}$	400			V
Turn-ON Time	t_{on}	$I_C=3A, I_{B1}=0.6A, I_{B2}=-1.2A, R_L=66.6\Omega, V_{CC}=200V$			0.5	μs
Storage Time	t_{stg}	$I_C=3A, I_{B1}=0.6A, I_{B2}=-1.2A, R_L=66.6\Omega, V_{CC}=200V$			2.5	μs
Fall Time	t_f	$I_C=3A, I_{B1}=0.6A, I_{B2}=-1.2A, R_L=66.6\Omega, V_{CC}=200V$			0.3	μs

Switching Time Test Circuit





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