

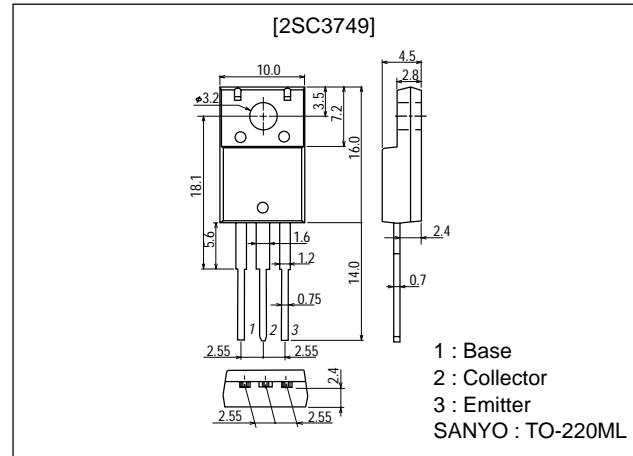
**2SC3749****500V/3A Switching Regulator Applications****Features**

- High breakdown voltage and high reliability.
- High-speed switching.
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		800	V
Collector-to-Emitter Voltage	V_{CEO}		500	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		3	A
Collector Current (Pulse)	I_{CP}	$PW \leq 300\mu\text{s}$, Duty Cycle $\leq 10\%$	6	A
Base Current	I_B		1	A
Collector Dissipation	P_C	$T_c = 25^\circ\text{C}$	25	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = 500\text{V}$, $I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5\text{V}$, $I_C = 0$			10	μA
DC Current Gain	h_{FE1}	$V_{CE} = 5\text{V}$, $I_C = 0.3\text{A}$	15*		50*	
	h_{FE2}	$V_{CE} = 5\text{V}$, $I_C = 1.5\text{A}$	8			
Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}$, $I_C = 0.3\text{A}$		18		MHz

Continued on next page.

* : The h_{FE1} of the 2SC3749 is classified as follows. When specifying the h_{FE1} rank, specify two ranks or more in principle.

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

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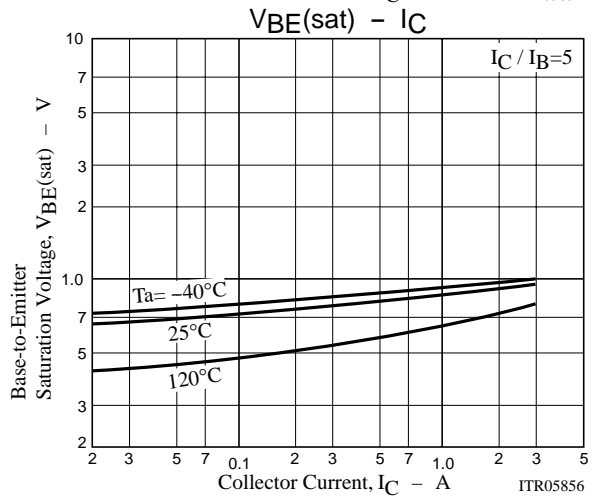
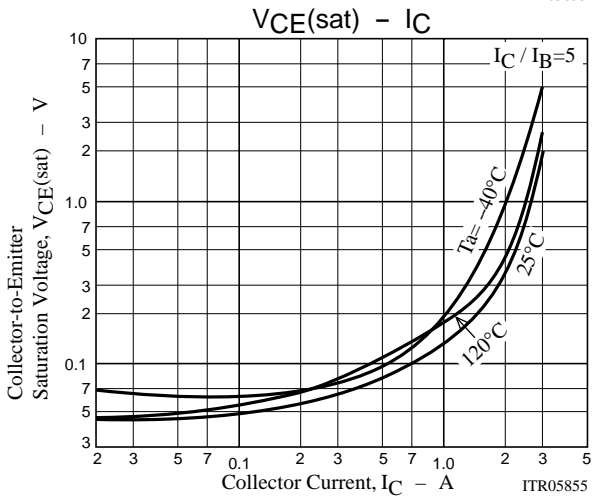
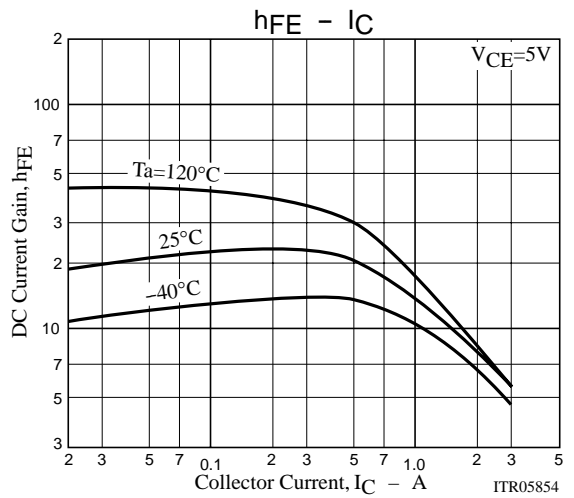
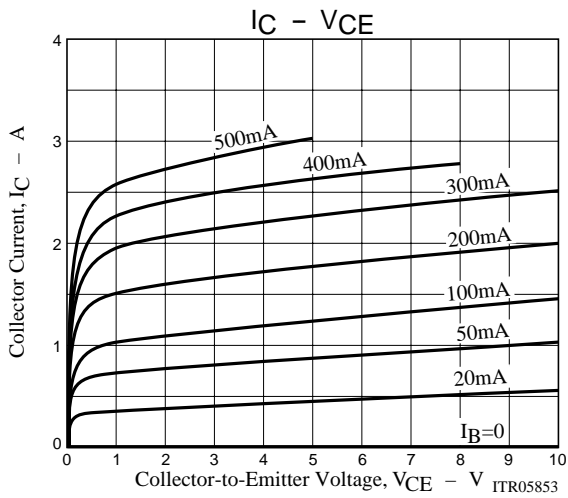
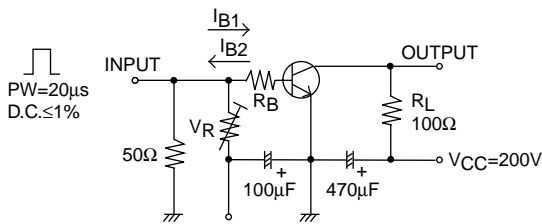
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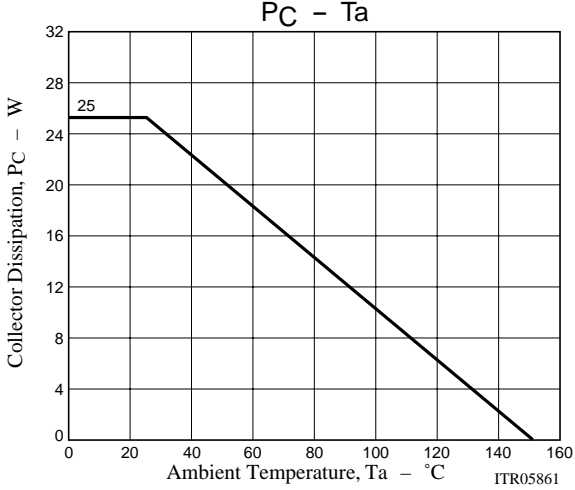
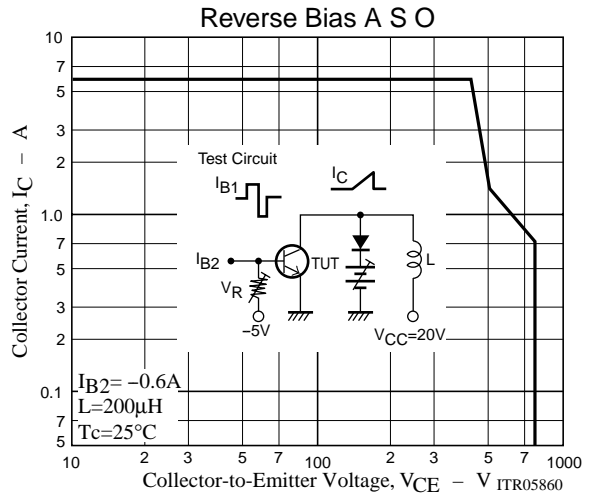
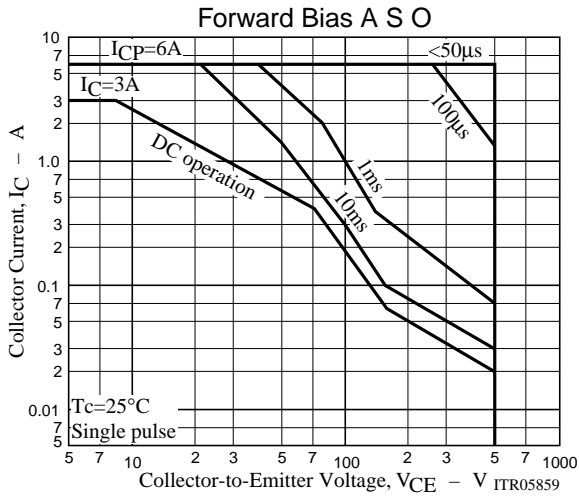
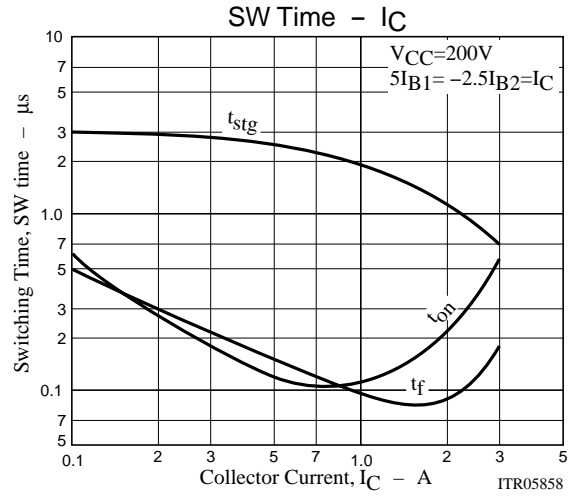
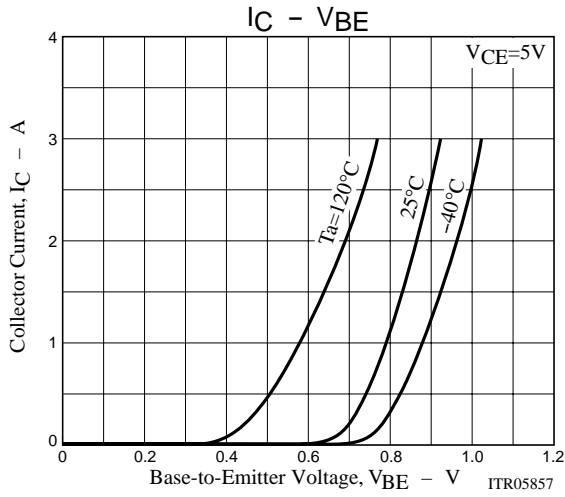
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		50		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.5A, I_B=0.3A$			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5A, I_B=0.3A$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	800			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	500			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	$I_C=1.5A, I_{B1}=-I_{B2}=0.6A, L=2mH, \text{Clamped}$	500			V
Turn-ON Time	t_{on}	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=2A, R_L=100\Omega$			0.5	μs
Storage Time	t_{stg}	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=2A, R_L=100\Omega$			3.0	μs
Fall Time	t_f	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=2A, R_L=100\Omega$			0.3	μs

Switching Time Test Circuit



2SC3749



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