

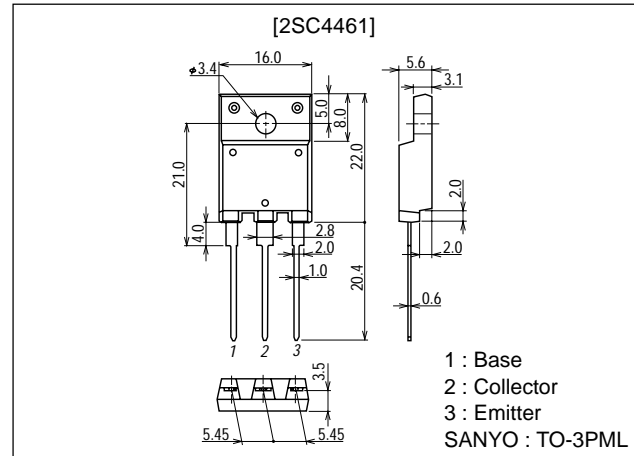
**2SC4461****500V/25A Switching Regulator Applications****Features**

- High breakdown voltage, high reliability.
- High-speed switching.
- Wide ASO.
- Adoption of MBIT process.
- Attachment workability is good by Mica-less package.

**Package Dimensions**

unit:mm

2039D

**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	$V_{CE0}$		500	V
Emitter-to-Base Voltage	$V_{EBO}$		7	V
Collector Current	$I_C$		25	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu\text{s}$ , duty cycle $\leq 10\%$	40	A
Base Current	$I_B$		8	A
Collector Dissipation	$P_C$		3	W
		$T_c = 25^\circ\text{C}$	65	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	$I_{CB0}$	$V_{CB} = 500\text{V}$ , $I_E = 0$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}$ , $I_C = 0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE} = 5\text{V}$ , $I_C = 2.4\text{A}$	15*		50*	
	$h_{FE2}$	$V_{CE} = 5\text{V}$ , $I_C = 12\text{A}$	8			

\* : For the  $h_{FE1}$  of the 2SC4461, specify two ranks or more in principle.

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

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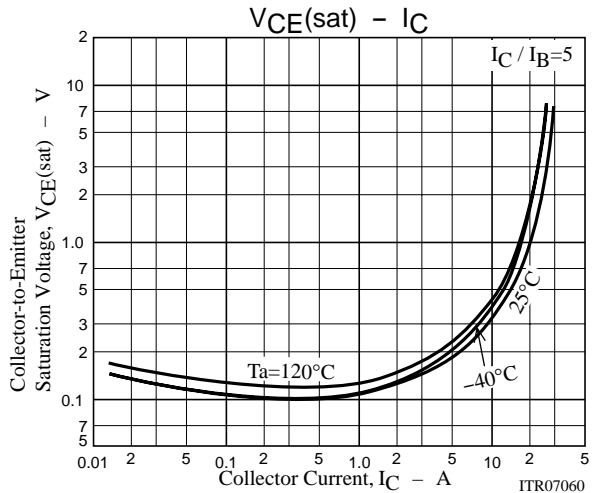
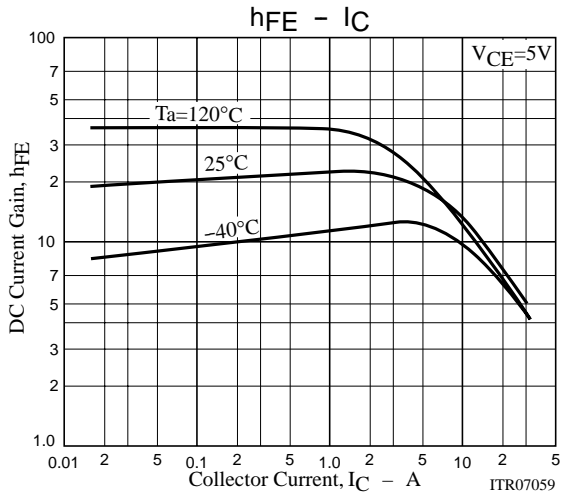
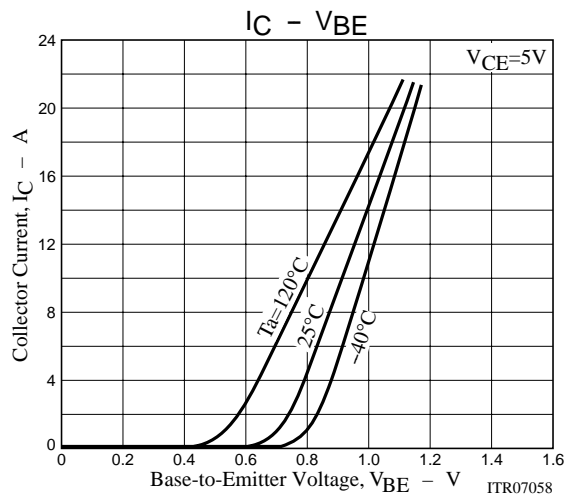
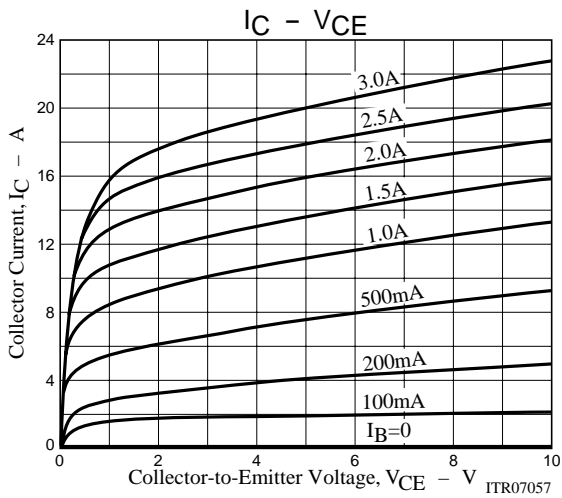
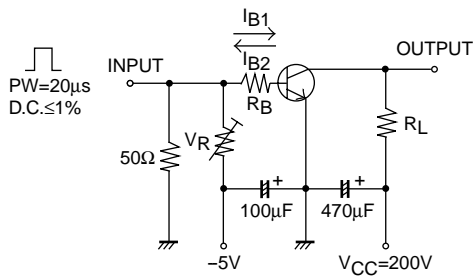
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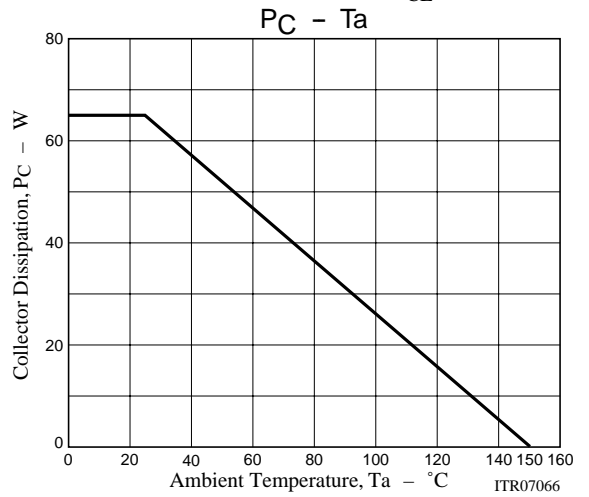
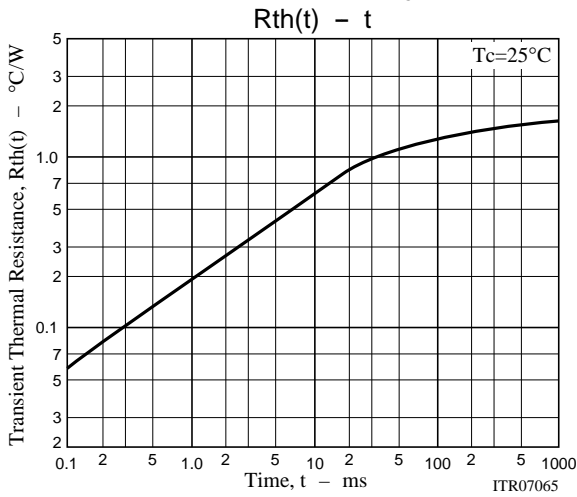
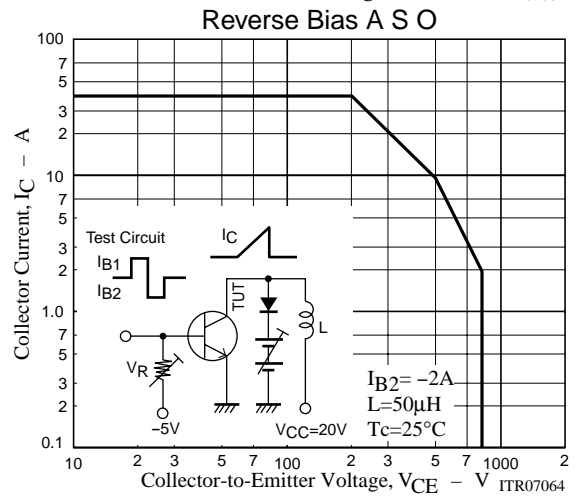
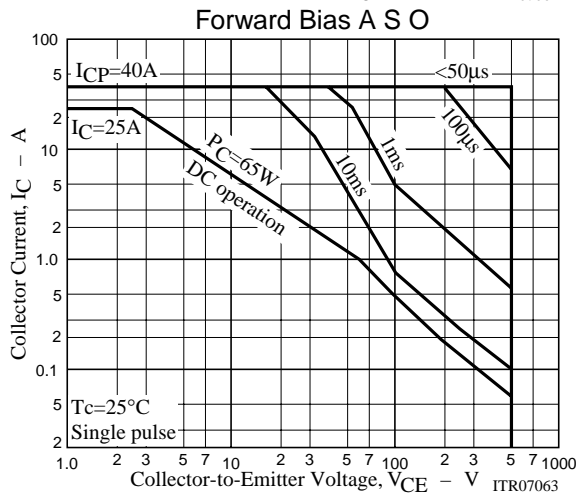
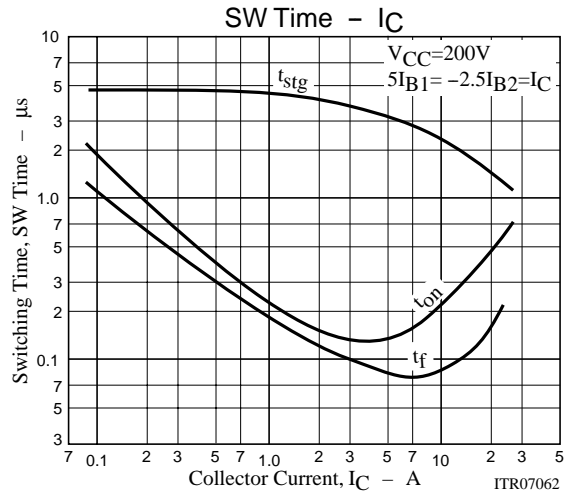
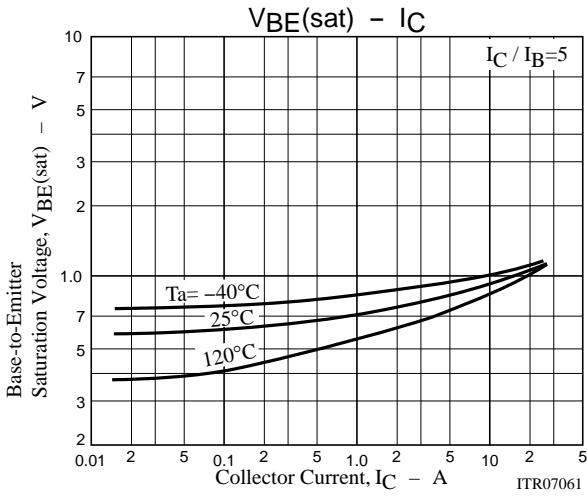
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=2.4A$		18		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		260		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=12A, I_B=2.4A$			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=12A, I_B=2.4A$			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	$V_{CEX(sus)}$	$I_C=10A, I_{B1}=-I_{B2}=2A, L=200\mu H, \text{Clamped}$	500			V
Turn-ON Time	$t_{on}$	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			0.5	$\mu s$
Storage Time	$t_{stg}$	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			3.0	$\mu s$
Fall Time	$t_f$	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			0.3	$\mu s$

## Switching Time Test Circuit



# 2SC4461



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