



SANYO Semiconductors

## DATA SHEET

# GK001T — N-Channel GTBT

## Switching Regulator Applications

### Features

- Adoption of process GTBT (Grounded-Trench-MOS assisted Bipolar-mode Field Effect Transistor).
- High breakdown voltage and high reliability.
- High speed switching.
- Wide ASO.
- Low saturation voltage, low On resistance :  $R_{CE(sat)}=280m\Omega$  (at 1A).
- High  $h_{FE}$  (typ : 1000).

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		600	V
Collector-to-Emitter Voltage	$V_{CES}$		600	V
Emitter-to-Base Voltage	$V_{EBO}$		7	V
Collector Current	$I_C$		2	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu s$ , Duty cycle $\leq 10\%$	4	A
Base Current	$I_B$		1	A
Collector Dissipation	$P_C$		0.8	W
		$T_c=25^\circ C$	22	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	$I_{CBO}$	$V_{CB}=500V$ , $I_E=0$			10	$\mu A$
Collector Cutoff Current	$I_{CES}$	$V_{CE}=500V$ , $R_{BE}=0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=6V$ , $I_C=0$			10	$\mu A$
DC Current Gain	$h_{FE1}$	$V_{CE}=5V$ , $I_C=50mA$	500		1500	
	$h_{FE2}$	$V_{CE}=5V$ , $I_C=400mA$	35			
	$h_{FE3}$	$V_{CE}=5V$ , $I_C=1.2A$	12			
Output Capacitance	$C_{ob}$	$V_{CB}=10V$ , $f=1MHz$		7.2		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1A$ , $I_B=0.2A$		280	560	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A$ , $I_B=0.2A$		1.1	1.5	V

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SANYO Electric Co., Ltd. Semiconductor Company

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# GK001T

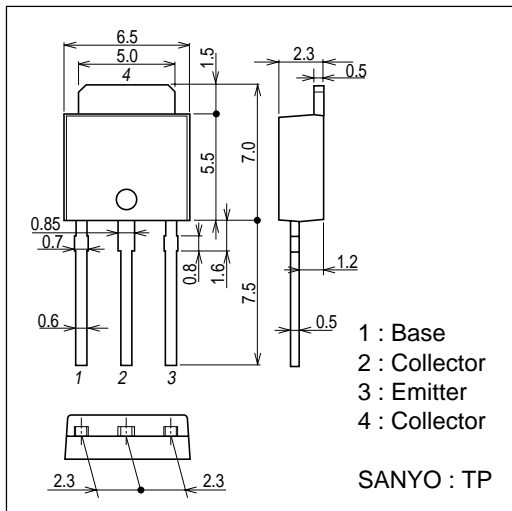
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	600			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=0$	600			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	200			V
Turn-ON Time	$t_{on}$	$I_C=1A, I_{B1}=0.1A, I_{B2}=-0.45A, R_L=200\Omega$		200		ns
Storage Time	$t_{stg}$	$I_C=1A, I_{B1}=0.1A, I_{B2}=-0.45A, R_L=200\Omega$		700		ns
Fall Time	$t_f$	$I_C=1A, I_{B1}=0.1A, I_{B2}=-0.45A, R_L=200\Omega$		70		ns

## Package Dimensions

unit : mm

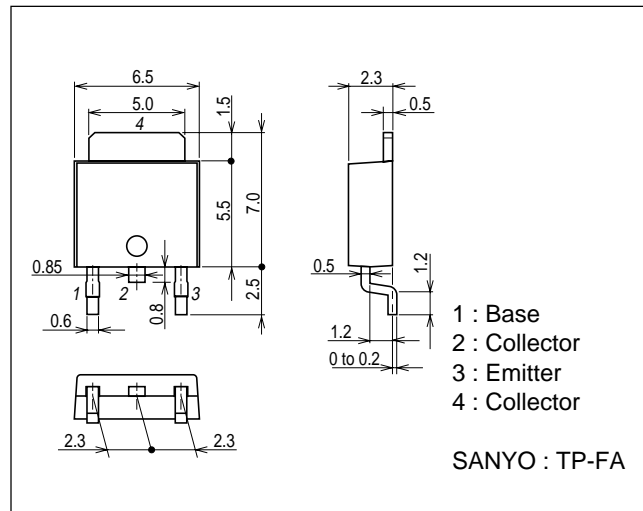
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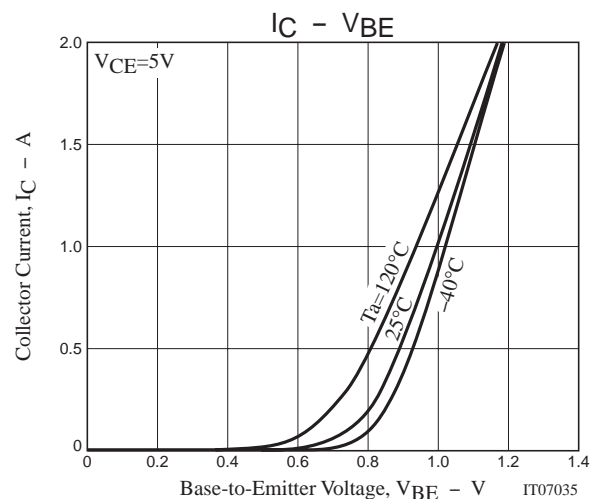
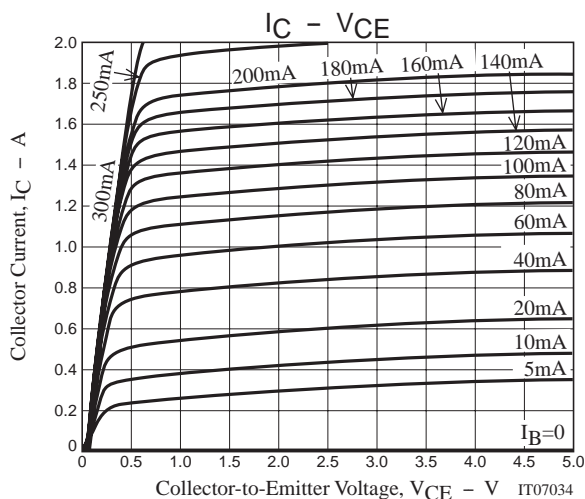
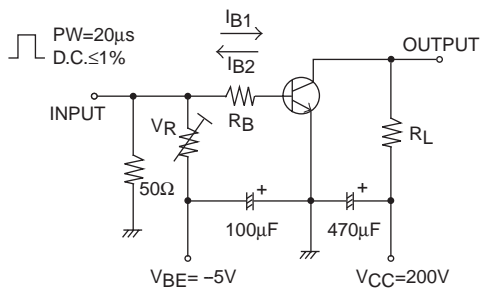
## Package Dimensions

unit : mm

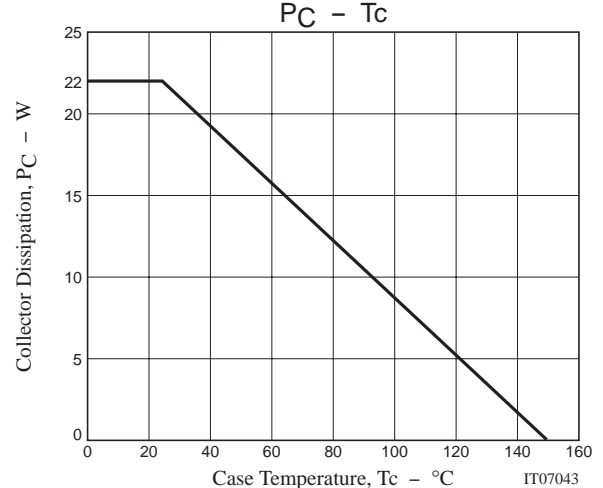
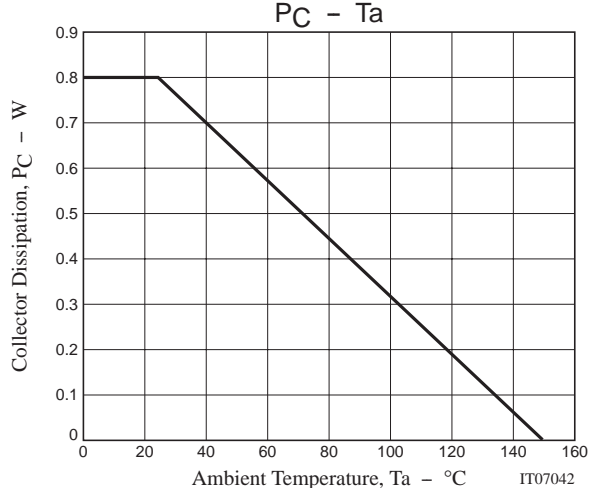
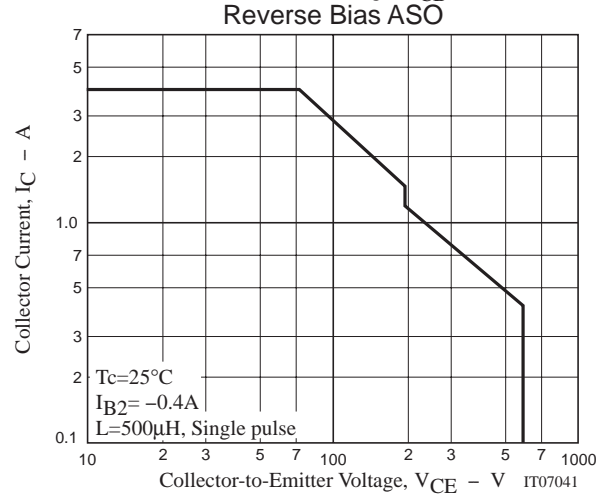
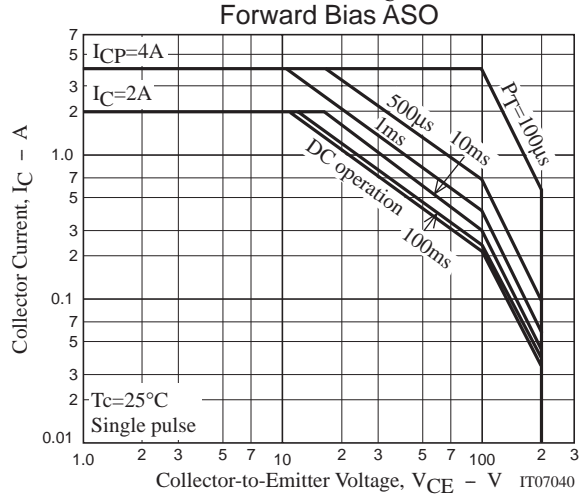
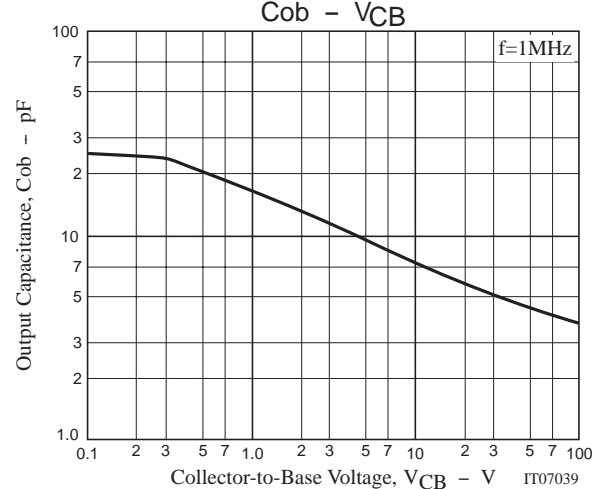
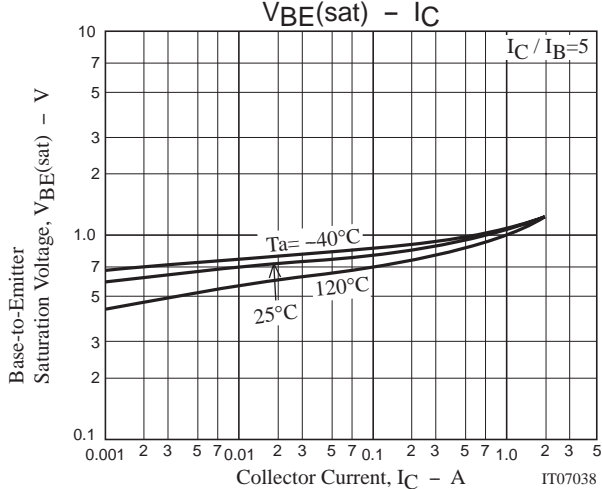
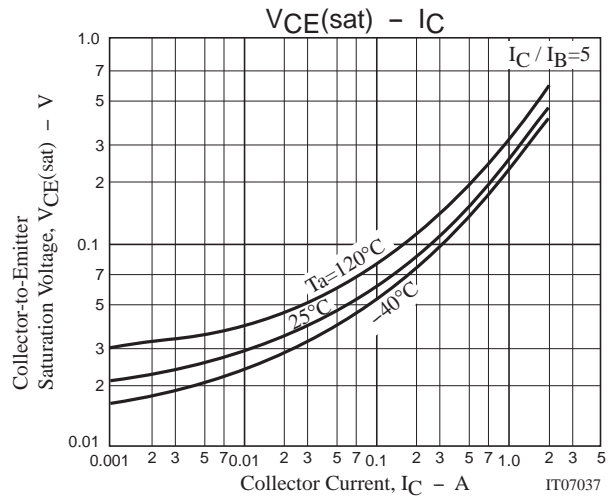
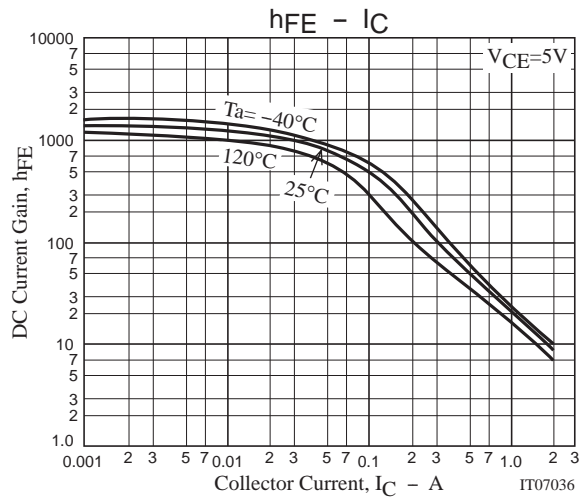
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## Switching Time Test Circuit



## GK001T



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