TOSHIBA Transistor Silicon NPN Epitaxial Type

TPC6501

High-Speed Switching Applications DC-DC Converter Applications Strobe Applications

- High DC current gain: $h_{FE} = 400$ to 1000 ($I_{C} = 0.2$ A)
- Low collector-emitter saturation voltage: VCE (sat) = 0.12 V (max)
- High-speed switching: $t_f = 25$ ns (typ.)

Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Collector-base voltage		V _{CBO}	20	V	
Collector-emitter voltage		V _{CEO}	10	V	
Emitter-base voltage		V _{EBO}	7	V	
Collector current	DC	IC	2.0	А	
	Pulse	I _{CP}	3.5		
Base current		Ι _Β	200	mA	
Collector power dissipation	DC	PC	0.8	W	
	t = 10 s	(Note)	1.6		
Junction temperature		Tj	150	°C	
Storage temperature range		T _{stg}	-55 to 150	°C	

Note: Mounted on FR4 board (glass epoxy, 1.6 mm thick, Cu area: 645 mm²)

Unit: mm 1 0.95 0.95 3 50 0 + 1 0.25 0.25 -0.15 1. Collector 2. Collector 3. Base 6. Collector 4. Emitter 5. Collector 5. Collector 5. Collector 7. Collector 6. Collector 7. Collector 7

Weight: 0.011 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit	
Collector cut-off current		I _{CBO}	$V_{CB} = 20 \text{ V}, I_{E} = 0$	_	_	100	nA	
Emitter cut-off current		I _{EBO}	V _{EB} = 7 V, I _C = 0	_	_	100	nA	
Collector-emitter breakdown voltage		V (BR) CEO	$I_C = 10 \text{ mA}, I_B = 0$	10	_	_	V	
DC current gain		h _{FE} (1)	$V_{CE} = 2 \text{ V}, I_{C} = 0.2 \text{ A}$	400	_	1000		
		h _{FE} (2)	$V_{CE} = 2 \text{ V}, I_{C} = 0.6 \text{ A}$	200	_	_		
Collector-emitter saturation voltage		V _{CE (sat)}	$I_C = 0.6 \text{ A}, I_B = 12 \text{ mA}$	_	_	0.12	٧	
Base-emitter saturation voltage		V _{BE} (sat)	I _C = 0.6 A, I _B = 12 mA	_	_	1.10	V	
Switching time	Rise time	t _r	See Figure 1 circuit diagram.	_	60	_		
	Storage time	t _{stg}	$V_{CC} \simeq 6 \text{ V}, R_L = 10 \Omega$	_	215	_	ns	
	Fall time	t _f	$I_{B1} = -I_{B2} = 12 \text{ mA}$	_	25	_		

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Circuit Configuration

Marking

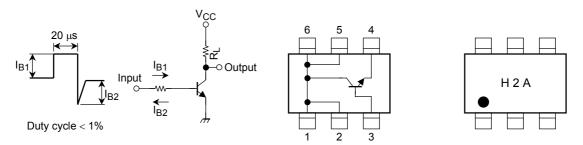
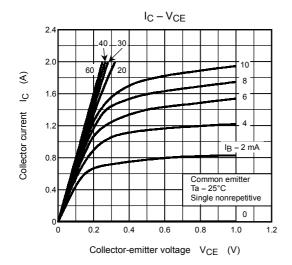
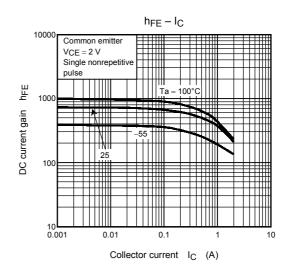
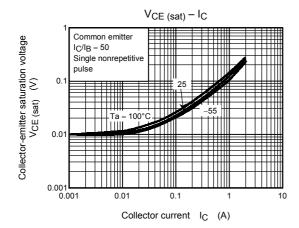
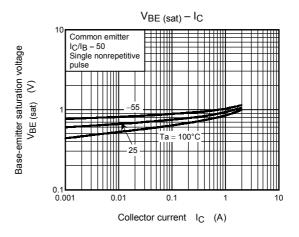


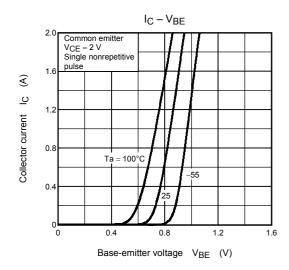
Figure 1 Switching Time Test Circuit & Timing Chart

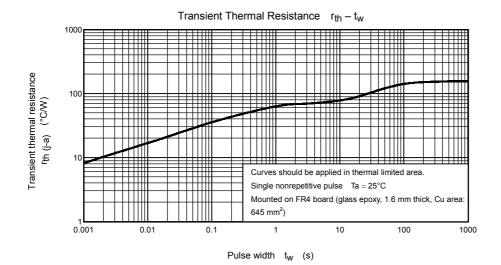


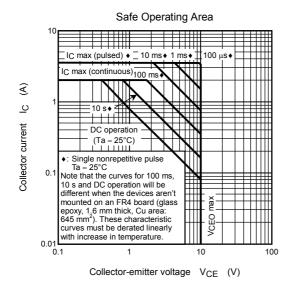












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