

Digital transistor (built-in resistors) Driver (60V, 2A) DTDS14GP

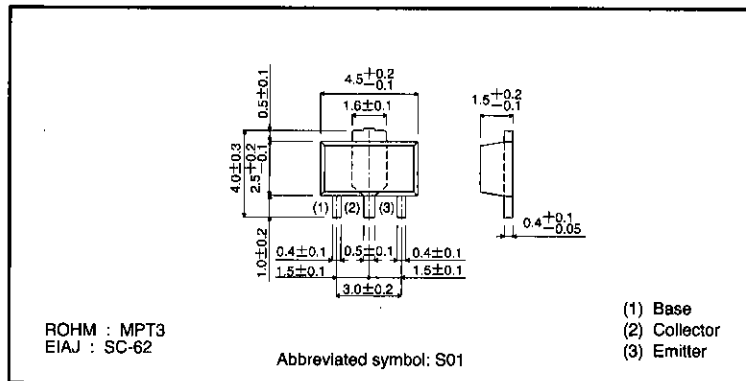
●Features

- 1) High h_{FE} .
 $h_{FE} = 1500$ (Typ.) ($V_{CE}/I_C = 5V/1A$)
- 2) Low $V_{CE(sat)}$.
 $V_{CE(sat)} = 0.16V$ (Typ.)
($I_C/I_B = 1A/10mA$)
- 3) Built-in zener diode for strong protection against reverse surges due to low loads.

●Structure

NPN digital transistor
(Built-in resistor type)

●External dimensions (Units: mm)



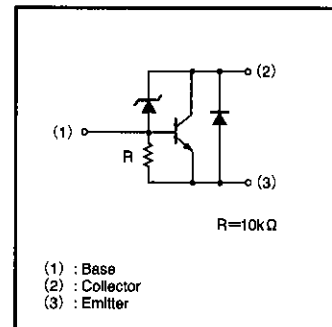
●Absolute maximum ratings ($T_a = 25^\circ C$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	60 ± 10	V
Collector-emitter voltage	V_{CEO}	60 ± 10	V
Emitter-base voltage	V_{EBO}	10	V
Collector current	I_C	2	A
	I_{CP}	4	A (Pulse) *1
Base current	I_B	0.03	A
Collector power dissipation	P_C	0.5	W *2
		2	
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	$-55 \sim 150$	$^\circ C$

*1 $P_w \leq 10ms$, Duty $\leq 1/2$

*2 On 40 x 40 x 0.7 mm ceramic board.

●Equivalent circuit



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●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	—	70	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	50	—	70	V	$I_C=50\mu A$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB}=40V$
Emitter cutoff current	I_{EBO}	0.77	—	1.43	mA	$V_{EB}=10V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C/I_B=1A/10mA$
DC current transfer ratio	h_{FE}	700	—	—	—	$V_{CE}=5V, I_C=200mA$ *1
		1000	—	—	—	$V_{CE}=5V, I_C=1A$ *1
		500	—	—	—	$V_{CE}=5V, I_C=2A$ *1
Transition frequency	f_T	—	300	—	MHz	$V_{CE}=5V, I_E=-0.5A, f=100MHz$ *2
Emitter-base resistance	R	7	10	13	k Ω	—
Diode forward voltage	V_F	—	—	1.5	V	$I_F=1.0A$

*1 Measured using pulse current.

*2 Transition frequency of mounted transistor.

●Packaging specifications

Type	Package	MPT3
	Package style	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
DTDS14GP		○

●Electrical characteristic curves

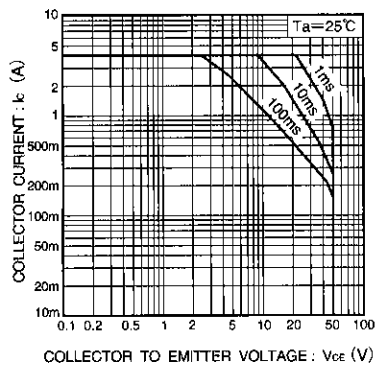


Fig.1 Safe operating area

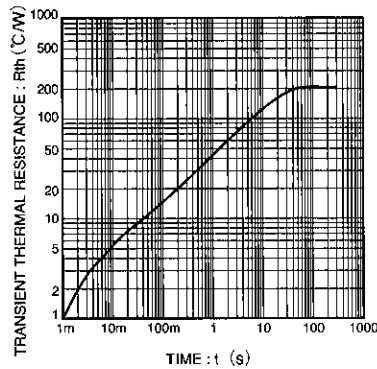


Fig.2 Transient thermal resistance

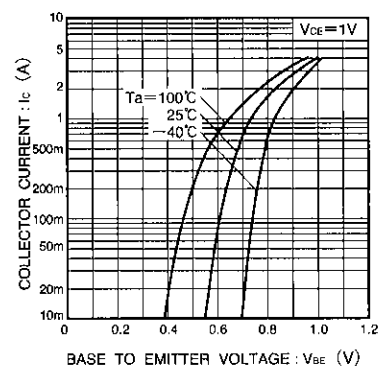


Fig.3 Grounded emitter propagation characteristics

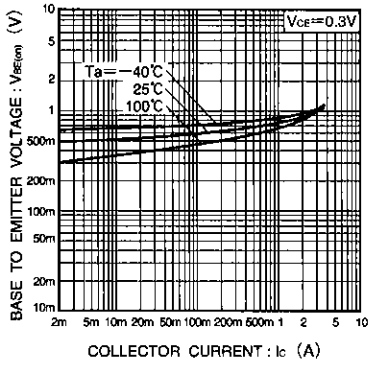


Fig.4 Grounded emitter propagation characteristics

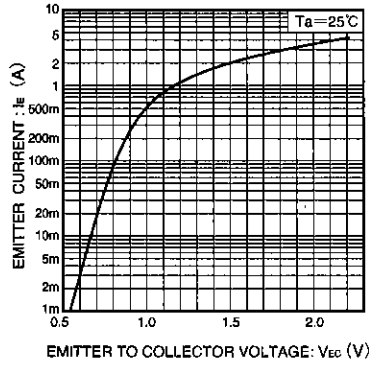


Fig.5 Emitter-collector diode forward characteristics

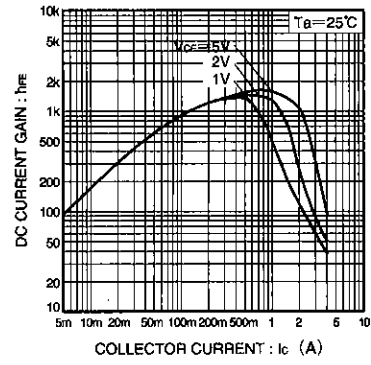


Fig.6 DC current gain vs. collector current (I)

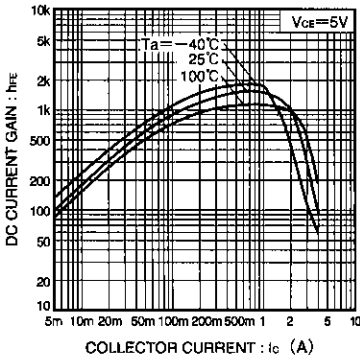


Fig.7 DC current gain vs. collector current (II)

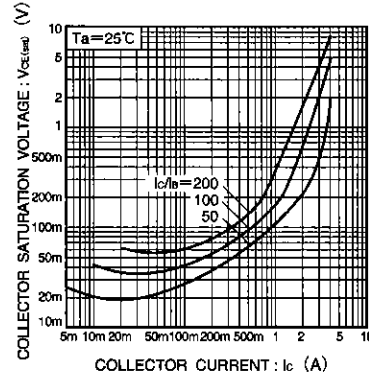


Fig.8 Collector-emitter saturation voltage vs. collector current (I)

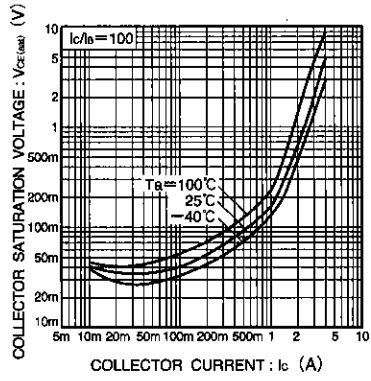


Fig.9 Collector-emitter saturation voltage vs. collector current (II)

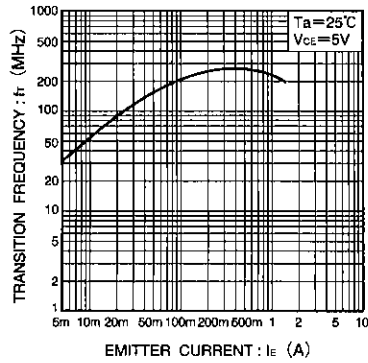


Fig.10 Gain bandwidth product vs. emitter current

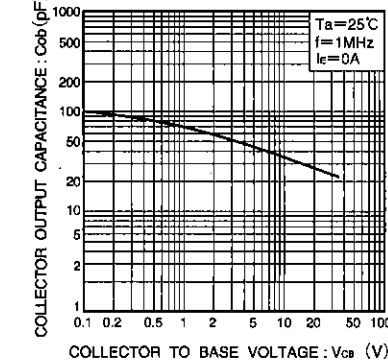


Fig.11 Collector output capacitance vs. collector-base voltage

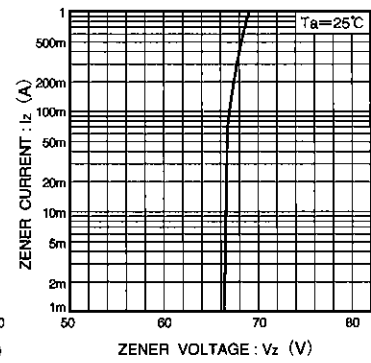


Fig.12 Zener characteristics

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