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

DTDS14GP

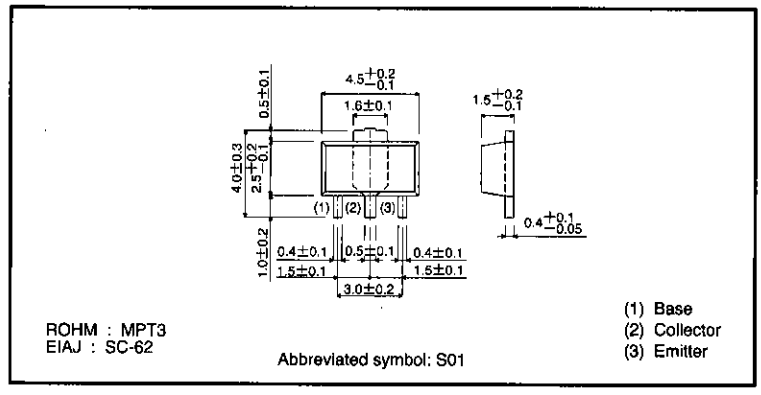
●Features

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.

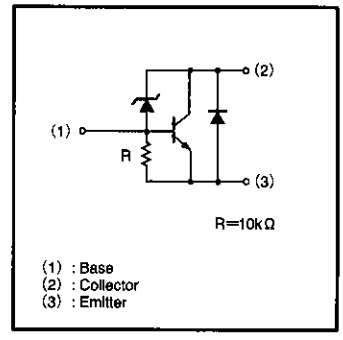
●Structure

NPN digital transistor
(Built-in resistor type)

●External dimensions (Units: mm)



●Equivalent circuit



●Absolute maximum ratings (Ta = 25℃)

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 curren	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	W *2
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55~150	℃

*1 Pw≦10ms, Duty≦1/2

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

●Electrical characteristics (Ta = 25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	—	70	V	I_C=50 μA
Collector-emitter breakdown voltage	BV_{CEO}	50	—	70	V	I_C=50 μA
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	kΩ	—
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

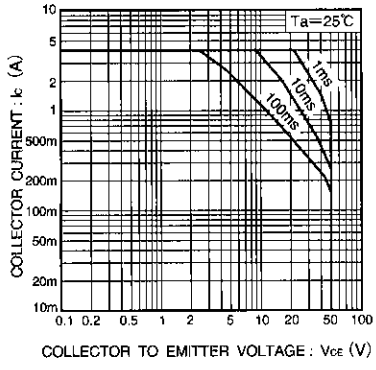


Fig.1 Safe operating area

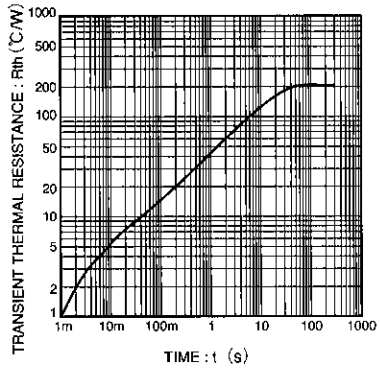


Fig.2 Transient thermal resistance

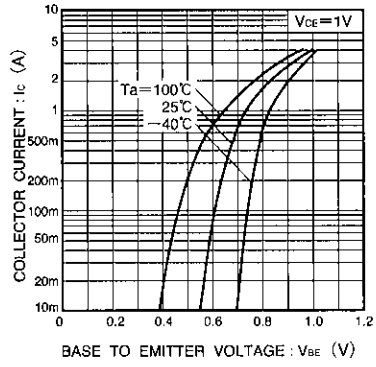


Fig.3 Grounded emitter propagation characteristics

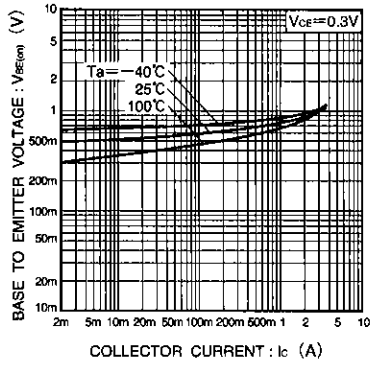


Fig.4 Grounded emitter propagation characteristics

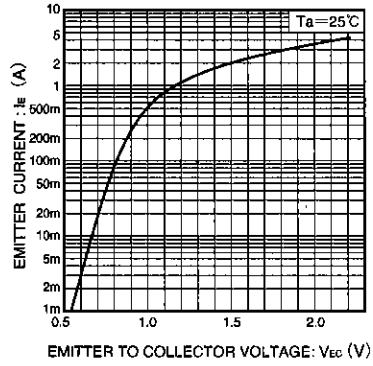


Fig.5 Emitter-collector diode forward characteristics

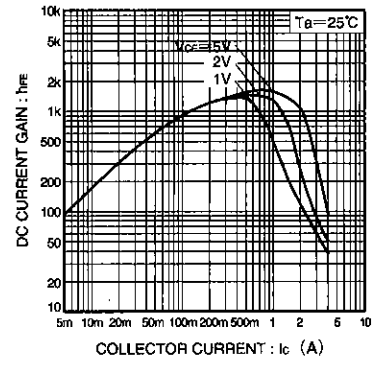


Fig.6 DC current gain vs. collector current (I)

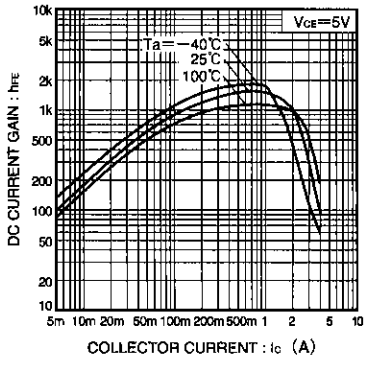


Fig.7 DC current gain vs. collecto rcurrent (Ⅱ)

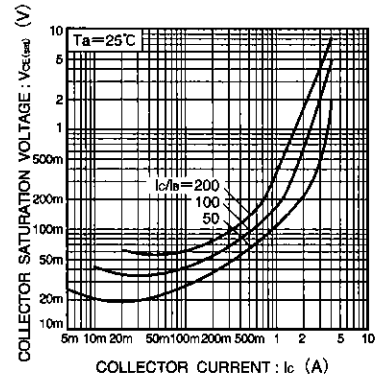


Fig.8 Collector-emitter saturation voltage vs. collector current (I)

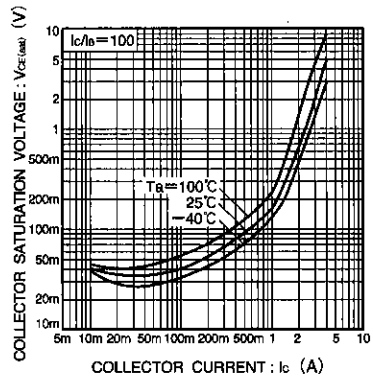


Fig.9 Collector-emitter saturation voltage vs. collector current (Ⅱ)

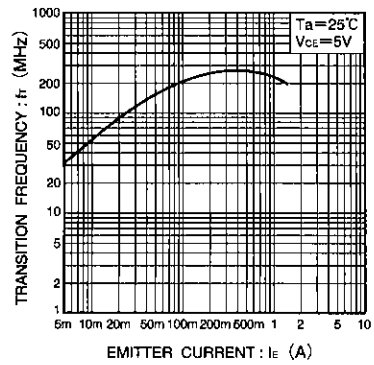


Fig.10 Gain bandwidth product vs. emitter current

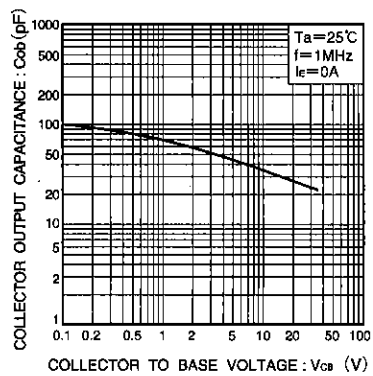


Fig.11 Collector output capacitance vs. collector-base voltage

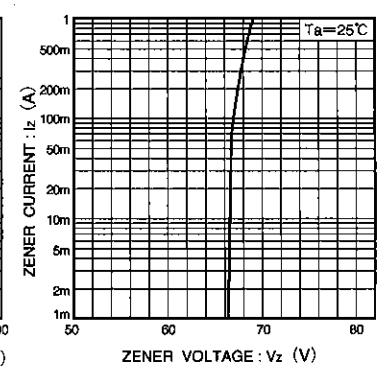


Fig.12 Zener characteristics

Digital transistors

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