1A / 60V Digital Transistor (with built-in resistor and zener diode)

DTDG14GP

●Applications
Driver

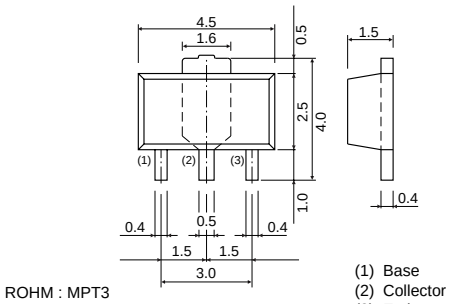
●Features
1) High h_{FE}.
   300 (Min.) (V_{CE} / I_C=2V / 0.5A)
2) Low saturation voltage,
   ($V_{CE(sat)}$=0.4V at I_C / I_B=500mA / 5mA)
3) Built-in zener diode gives strong protection against reverse surge by L- load (an inductive load).

●Structure
NPN epitaxial planar silicon transistor
(with built-in resistor and zener diode)

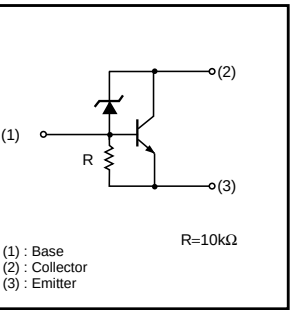
●Packaging specifications

Part No.	Package	MPT3
	Packaging type	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
DTDG14GP		○

●External dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta = 25°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}	5	V
Collector current	I_C	1	A
	I_{CP}	2 ∗1	A
Collector power dissipation	P_C	0.5	W
		2 ∗2	
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

∗1 Pw≤10ms, Duty cycle≤1/2
∗2 When mounted on a 40×40×0.7 mm ceramic board.

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	–	70	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	70	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	–	–	V	I_E=720μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB}=40V
Emitter cutoff current	I_{EBO}	300	–	580	μA	V_{EB}=4V
Collector-emitter saturation voltage	V_{CE}(sat)	–	–	0.4	V	I_C/I_B=500mA/5mA
DC current transfer ratio	h_{FE}	300	–	–	–	V_{CE}=2V, I_C=500mA
Emitter-base resistance	R	7	10	13	kΩ	–
Transition frequency	f_T *	–	80	–	MHz	V_{CE}=5V, I_E=–0.1A, f=30MHz

* Characteristics of built-in transistor

●Electrical characteristic curves

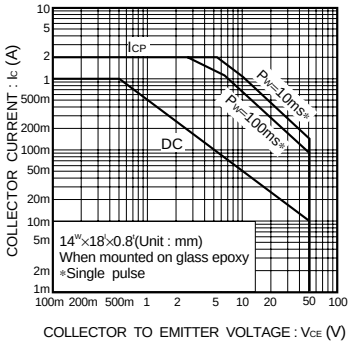


Fig.1 Safe operating area

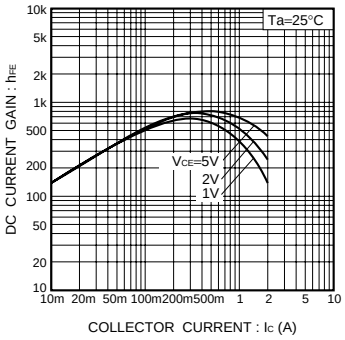


Fig.2 DC current gain vs. collector current

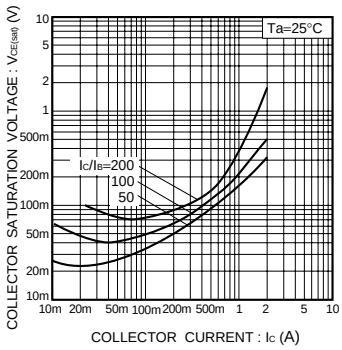


Fig.3 Collector-emitter saturation voltage vs. collector current

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