

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).

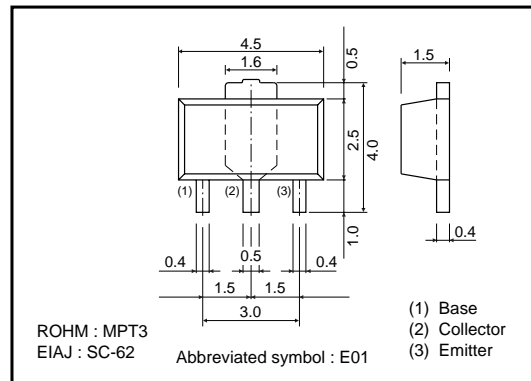
●Structure

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

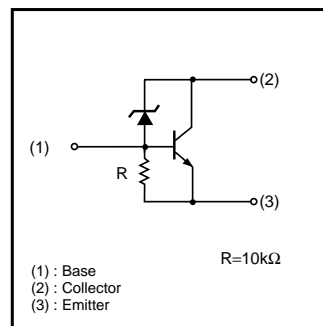
●Packaging specifications

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

●External dimensions (Unit : mm)



●Equivalent circuit



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

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}	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	T_j	150	$^{\circ}C$
Storage temperature	T_{stg}	-55 to +150	$^{\circ}C$

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

*2 When mounted on a 40×40×0.7 mm ceramic board.

Transistors

●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

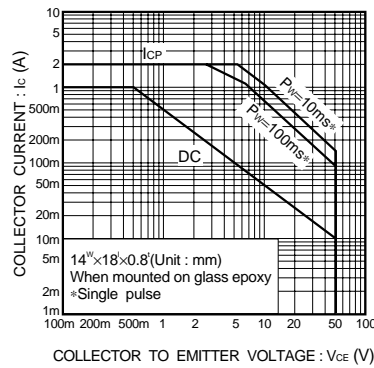


Fig.1 Safe operating area

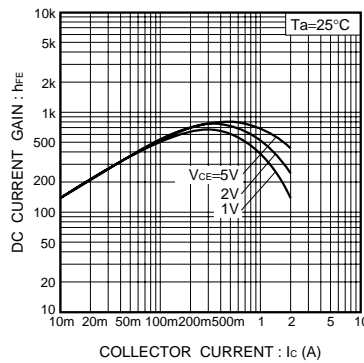


Fig.2 DC current gain vs. collector current

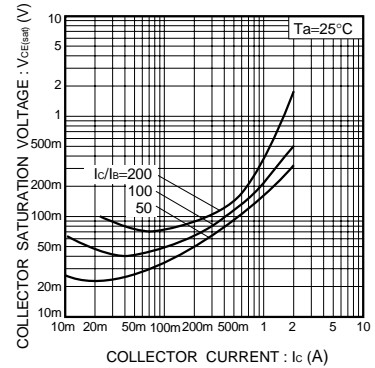


Fig.3 Collector-emitter saturation voltage vs. collector current

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