

# Digital transistor (built in resistor and zener diode) Driver (60V,1A)

## DTDG14GP

### ●Features

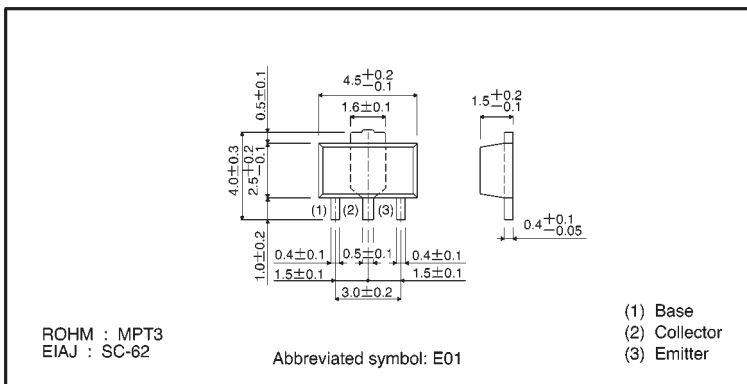
- 1) High  $h_{FE}$ , typically  $h_{FE} = 750$  at  $V_{CE} = 2V$  at  $I_C = 0.5A$ .
- 2) Low saturation voltage, typically  $V_{CE(sat)} = 0.4V$  at  $I_C/I_B = 500mA / 5mA$ .
- 3) Built-in zener diode to protect the transistor against reverse voltages when connected to allow load.

### ●Structure

NPN digital transistor

(with single built in resistor and zener diode)

### ●External dimensions (Units: mm)



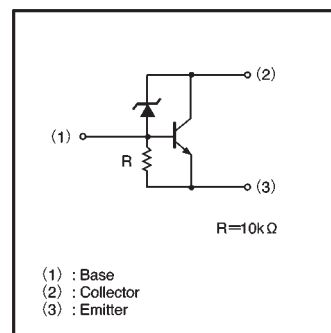
### ●Absolute maximum ratings ( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	$60 \pm 10$	V
Collector-emitter voltage	$V_{CEO}$	$60 \pm 10$	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	1	A
	$I_{CP}$	2	A (Pulse) *1
Collector power dissipation	$P_C$	0.5	W
		2	
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	$-55 \sim +150$	$^\circ C$

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

\*2 When mounted on a  $40 \times 40 \times 0.7$  mm ceramic board.

### ●Equivalent circuit



●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	$I_C=1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	5	—	—	V	$I_E=720\mu A$
Collector cutoff current	$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB}=40V$
Emitter cutoff current	$I_{EBO}$	300	—	580	$\mu A$	$V_{EB}=4V$
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	$k\Omega$	—
Transition frequency	$f_T$	—	80	—	MHz	$V_{CE}=5V, I_E=-0.1A, f=30MHz$ *

\* Transition frequency of the device

●Packaging specifications

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

●Electrical characteristic curves

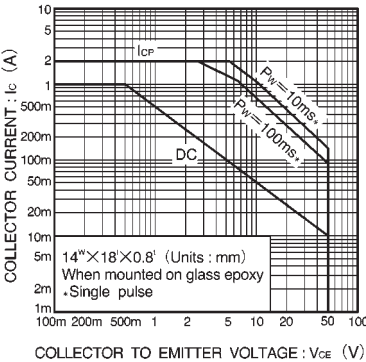


Fig.1 Safe operating area

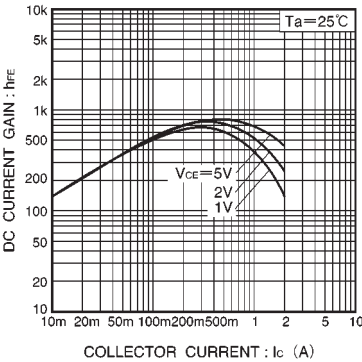


Fig.2 DC current gain vs. collector current

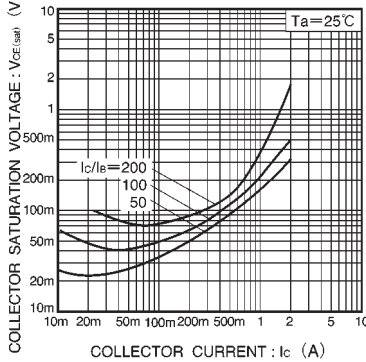


Fig.3 Collector-emitter saturation voltage vs. collector current