

Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTDG12GPLT1G

●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).
- We declare that the material of product compliance with RoHS requirements.

●Structure

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

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	60 ± 10	V
Collector-emitter voltage	V_{CE0}	60 ± 10	V
Emitter-base voltage	V_{EB0}	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 $40 \times 40 \times 0.7$ mm ceramic board.

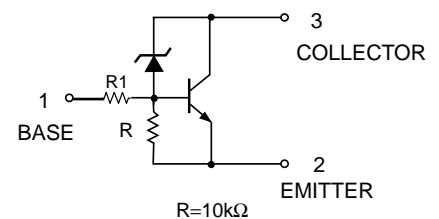
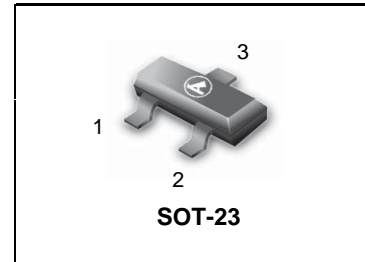
DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTDG12GPLT1G	Q7	1	22	3000/Tape & Reel
LDTDG12GPLT3G	Q7	1	22	10000/Tape & Reel

●Electrical characteristics ($T_a = 25^\circ C$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CB0}	50	-	70	V	$I_C = 50\mu A$
Collector-emitter breakdown voltage	BV_{CE0}	50	-	70	V	$I_C = 1mA$
Emitter-base breakdown voltage	BV_{EB0}	5	-	-	V	$I_E = 720\mu A$
Collector cutoff current	I_{CB0}	-	-	0.5	μA	$V_{CB} = 40V$
Emitter cutoff current	I_{EB0}	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	$k\Omega$	-
Transition frequency	f_t *	-	80	-	MHz	$V_{CE} = 5V, I_E = -0.1A, f = 30MHz$

* Characteristics of built-in transistor



LDTDG12GPLT1G

●Electrical characteristic curves

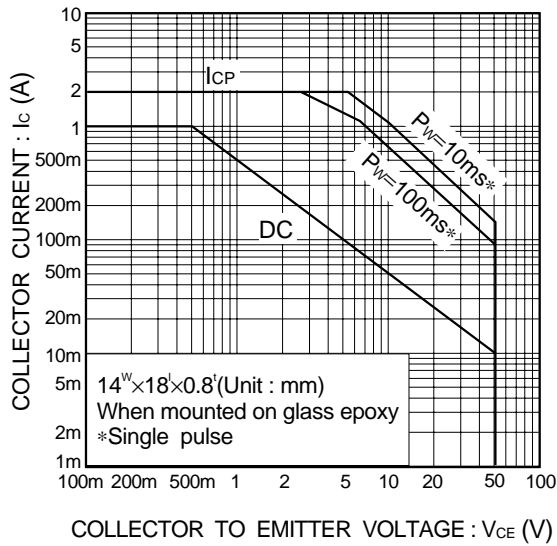


Fig.1 Safe operating area

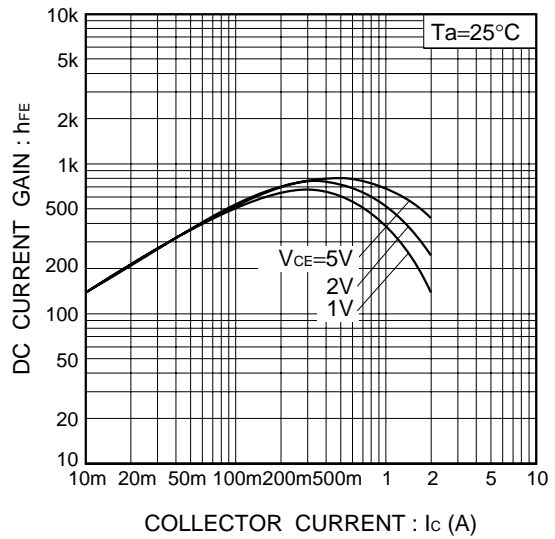


Fig.2 DC current gain vs. collector current

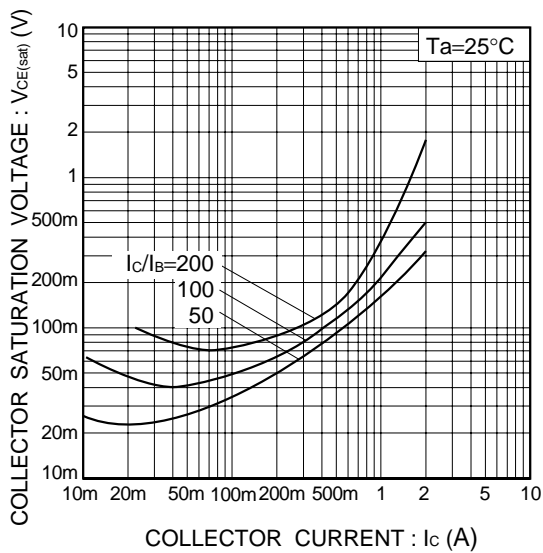


Fig.3 Collector-emitter saturation voltage vs. collector current

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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

