Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTDG12GPT1G

●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.

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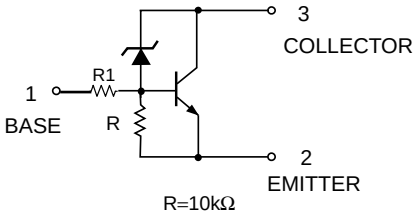

R=10kΩ

●Structure

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

●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.

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTDG12GPT1G	Q7	1	22	3000/Tape & Reel
LDTDG12GPT3G	Q7	1	22	10000/Tape & Reel

●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

LDTDG12GPT1G

●Electrical characteristic curves

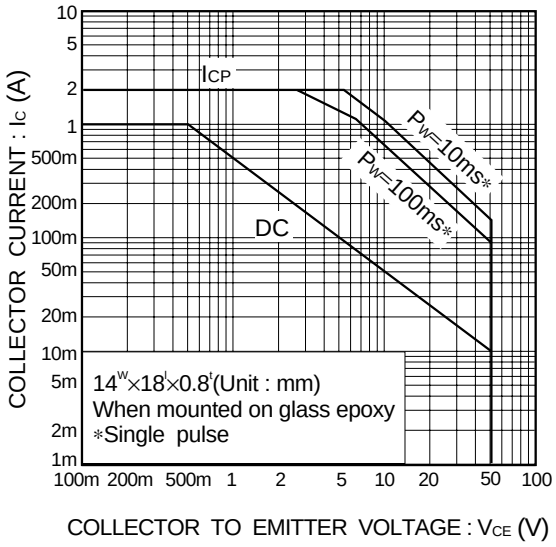

Fig.1 Safe operating area

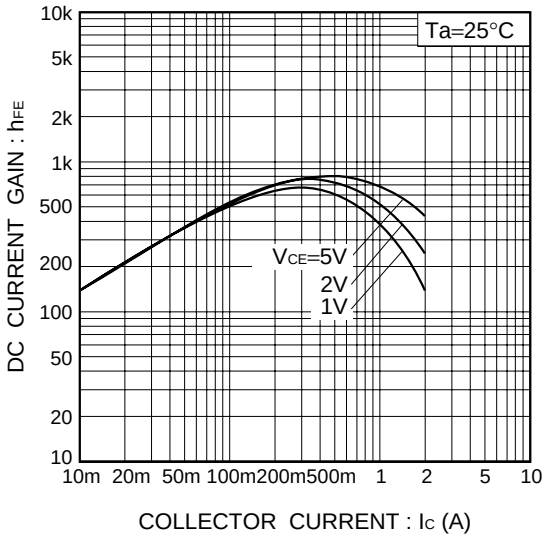

Fig.2 DC current gain vs. collector current

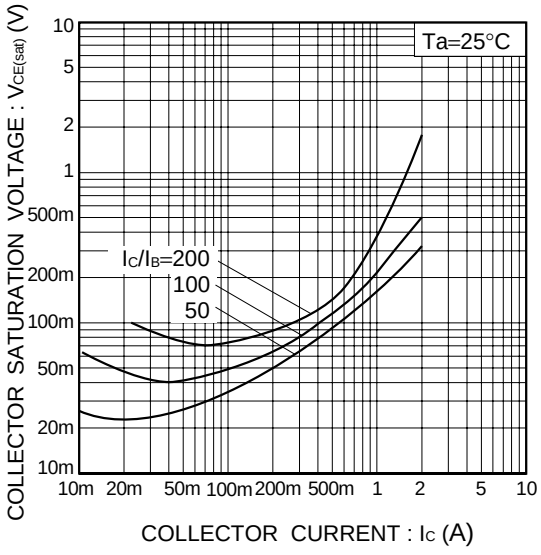

Fig.3 Collector-emitter saturation voltage vs. collector current

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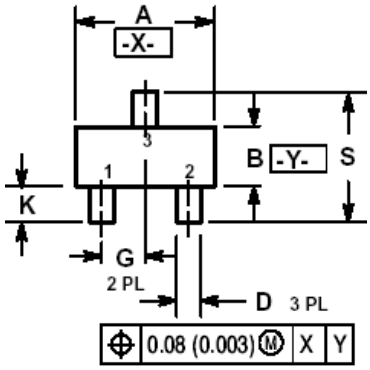
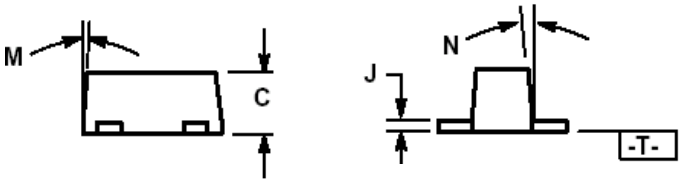


NOTES:
1.DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2.CONTROLLING DIMENSION: MILLIMETERS
3.MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4.463C-01 OBSOLETE, NEW STANDARD 463C-02.



	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10 °	---	---	10 °
N	---	---	10 °	---	---	10 °
S	1.50	1.60	1.70	0.059	0.063	0.067