Bias Resistor Transistor

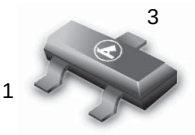
NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTC114WLT1G

- **Applications**
  Inverter, Interface, Driver

- **Features**
  1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
  2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
  3) Only the on/off conditions need to be set for operation, making the device design easy.

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



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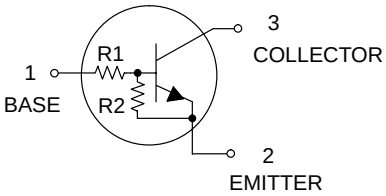

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_I	−10 to +30	V
Output current	I_O	100	mA
	$I_{C(Max.)}$	100	mA
Collector Power dissipation	Pc	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTC114WLT1G	M4	10	4.7	3000/Tape & Reel
LDTC114WLT3G	M4	10	4.7	10000/Tape & Reel

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.8	V	V_{CC}=5V, I_O=100μA
	$V_{I(on)}$	3	–	–		V_O=0.3V, I_O=2mA
Output voltage	$V_{O(on)}$	–	0.1	0.3	V	I_O=10mA, I_I=0.5mA
Input current	I_I	–	–	0.88	mA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=50V, V_I=0V
DC current gain	G_I	24	–	–	–	I_O=10mA, V_O=5V
Input resistance	R_1	7	10	13	kΩ	–
Resistance ratio	R_2/R_1	0.37	0.47	0.57	–	–
Transition frequency	f_T *	–	250	–	MHz	V_{CE}=10V, I_E= −5mA, f=100MHz

* Characteristics of built-in transistor

LDTC114WLT1G

- **Electrical characteristic curves**

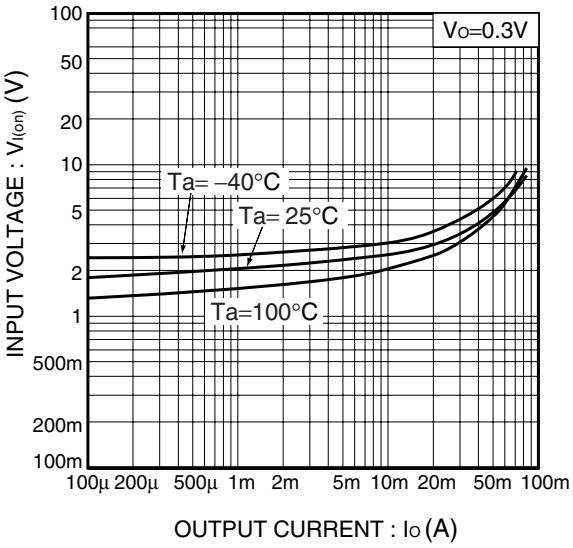

Fig.1 Input voltage vs. Output current (ON characteristics)

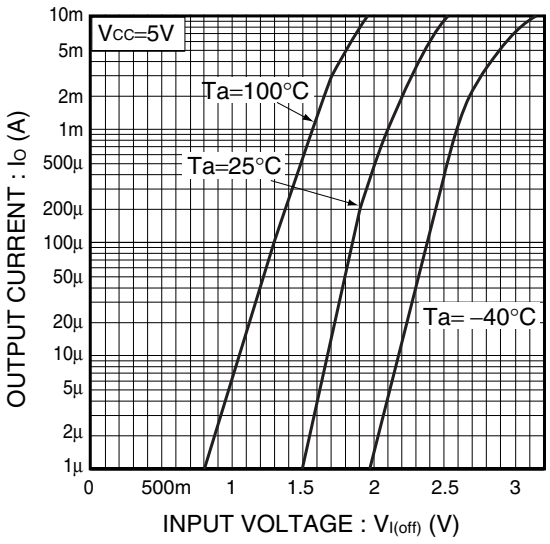

Fig.2 Output current vs. Input voltage (OFF characteristics)

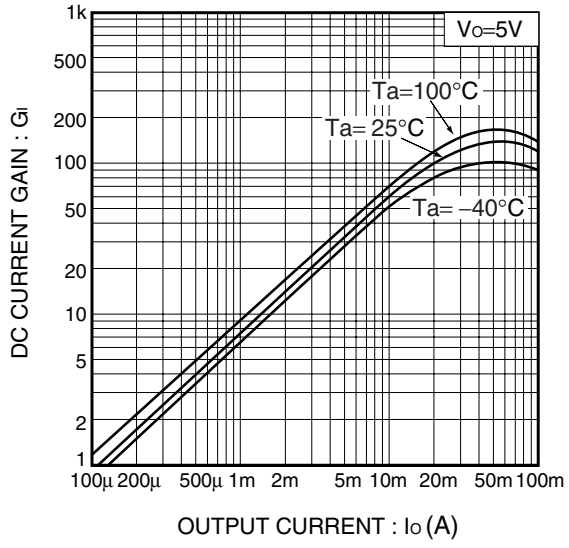

Fig.3 DC current gain vs. Output current

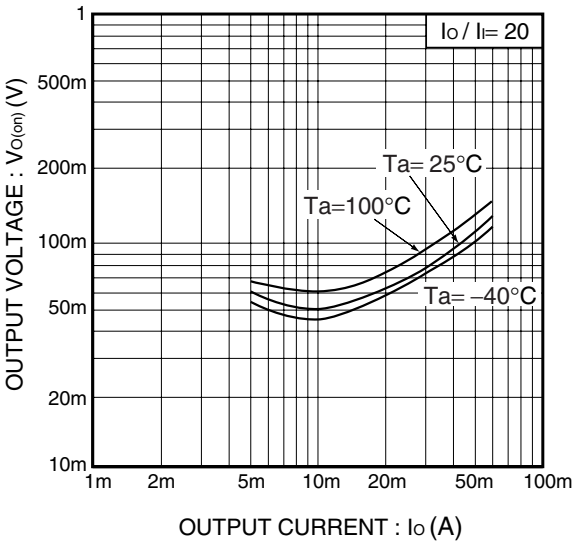

Fig.4 Output voltage vs. Output current

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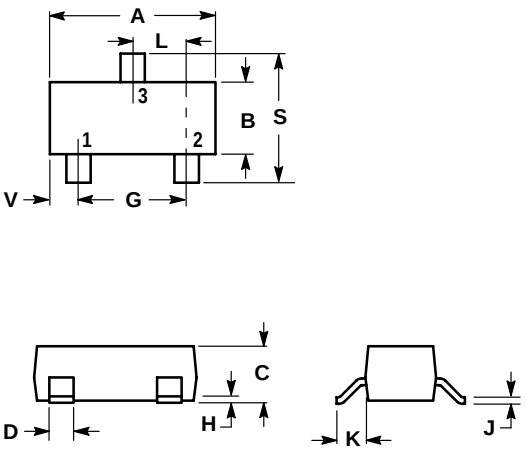

NOTES:

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