

Parameter	Value
$V_{CC}$	$60\pm 10V$
$I_C$	1A
$R_1$	2.2k $\Omega$
$R_2$	10k $\Omega$

### ●Features

- 1)High DC current gain.  
(Min.300 at  $V_o/I_o=2V/0.5A$ )
- 2)Low  $V_o(ON)$ .  
(Typ.400mV at  $I_o/I_f=500mA/5mA$ )
- 3)Built-in zener diode gives strong protection against reverse surge by L-load.  
(an inductive load)

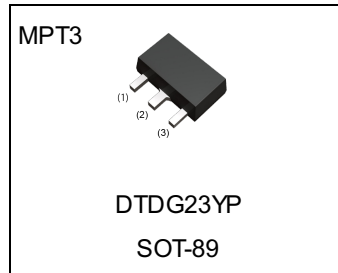
### ●Application

INVERTER, INTERFACE, DRIVER

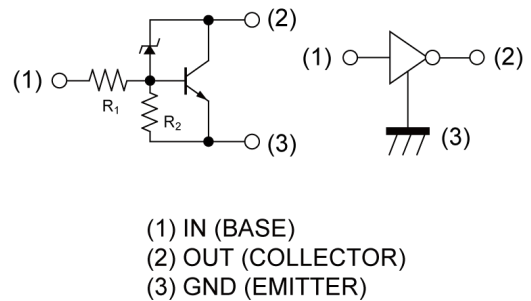
### ●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTDG23YP	MPT3	4540	T100	180	12	1000	E02

### ●Outline



### ●Inner circuit



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

Parameter	Symbol	Values	Unit
Supply voltage	$V_{CC}$	60±10	V
Input voltage	$V_{IN}$	-6 to 40	V
Collector current	$I_C$	1	A
	$I_{CP}^{*1}$	2	A
Power dissipation	$P_D^{*2}$	1.5	W
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu\text{A}$	-	-	0.3	V
	$V_{I(on)}$	$V_O = 0.4V, I_O = 100\text{mA}$	2.0	-	-	
Output voltage	$V_{O(on)}$	$I_O / I_I = 500\text{mA} / 5\text{mA}$	-	-	400	mV
Input current	$I_I$	$V_I = 5V$	-	-	3.6	mA
Output current	$I_{O(off)}$	$V_{CC} = 40V, V_I = 0V$	-	-	500	nA
DC current gain	$G_I$	$V_O = 2V, I_O = 500\text{mA}$	300	-	-	-
Input resistance	$R_1$	-	1.54	2.2	2.86	kΩ
Emitter-base resistance	$R_2$	-	7	10	13	kΩ
Transition frequency	$f_T^{*3}$	$V_{CE} = 5V, I_E = -100\text{mA}, f = 30\text{MHz}$	-	80	-	MHz

\*1  $P_w \leq 10\text{msec. duty} \leq 1/2$

\*2 Mounted on a ceramic board.(40×40×0.7mm)

\*3 Characteristics of built-in transistor

● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.1 Input Voltage vs. Output Current (ON Characteristics)

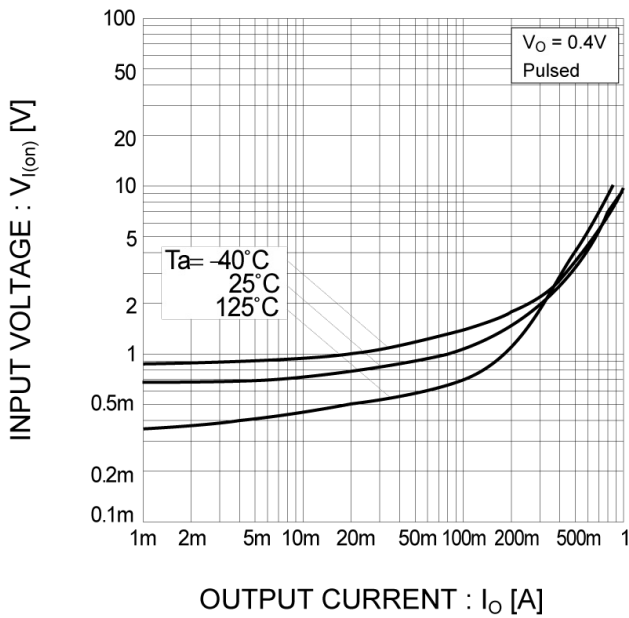


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

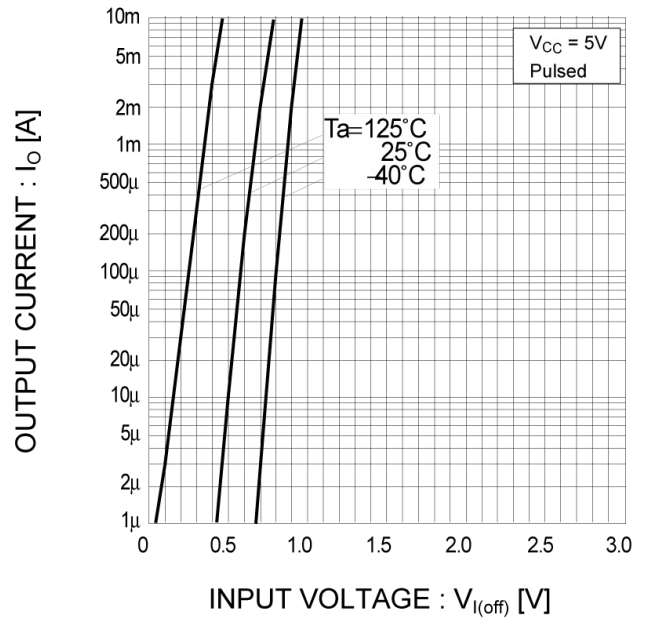


Fig.4 DC Current Gain vs. Output Current

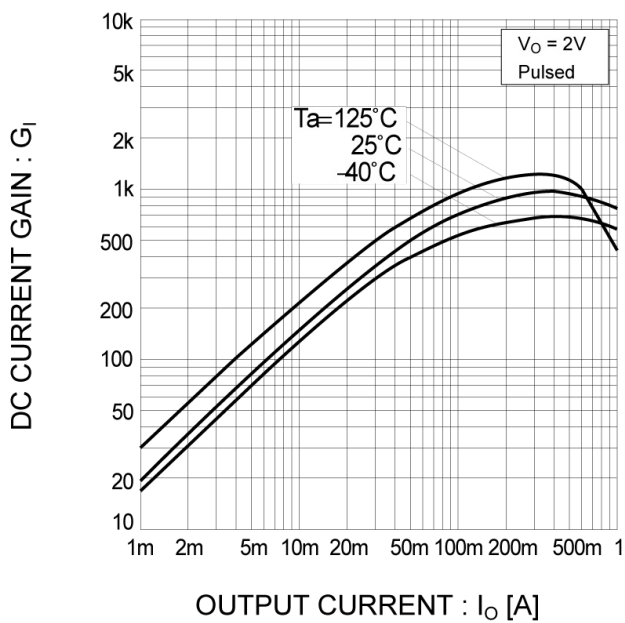
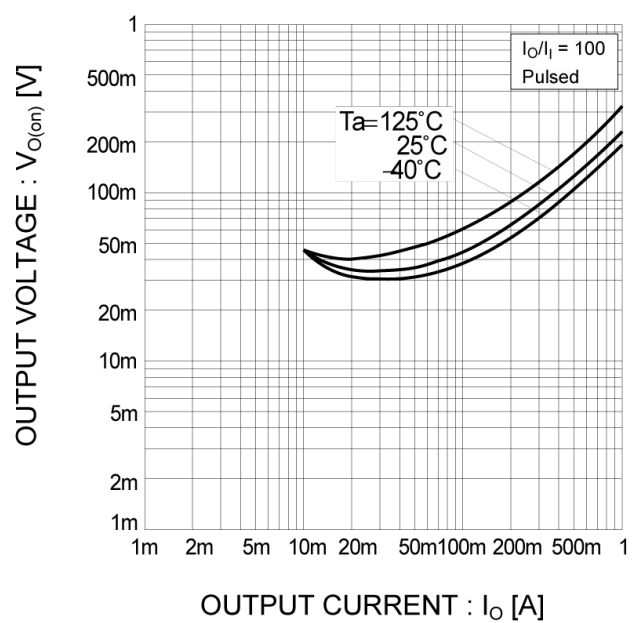
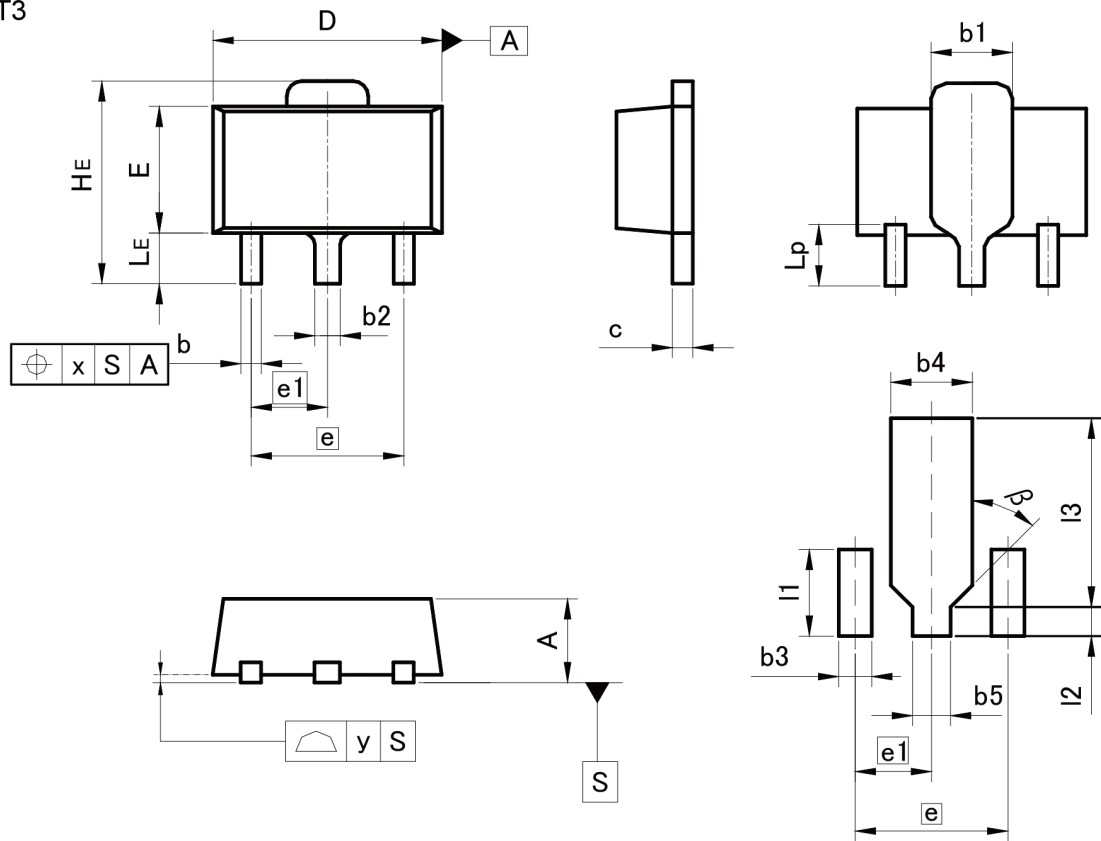


Fig.5 Output Voltage vs. Output Current



●Dimensions

MPT3



Pattern of terminal position areas  
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.40	1.50	0.055	0.059
b	0.30	0.50	0.012	0.020
b1	1.50	1.70	0.059	0.067
b2	0.40	0.60	0.016	0.024
c	0.35	0.50	0.014	0.020
D	4.40	4.70	0.173	0.185
E	2.40	2.70	0.094	0.106
e	3.00		0.118	
e1	1.50		0.059	
HE	3.70	4.30	0.146	0.169
LE	0.80	1.20	0.031	0.047
Lp	1.01	1.41	0.040	0.056
x	-	0.15	-	0.006
y	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b3	-	0.65	-	0.026
b4	-	1.70	-	0.067
b5	-	0.75	-	0.030
l1	-	1.71	-	0.067
l2	-	0.58	-	0.023
l3	-	3.72	-	0.146
β	45°		45°	

Dimension in mm/inches

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