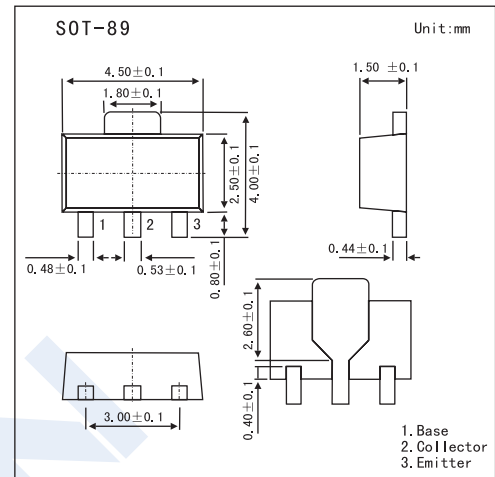


## Digital Transistors

## DTDG23YP

## ■ Features

- NPN Epitaxial Planar Silicon Transistor  
(with built-in resistors and zener diode).
- High DC Current Gain.
- Built-in Zener Diode Gives Strong Protection  
Against Reverse Surge By L-load (an inductive load).

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	$60 \pm 10$	V
Input Voltage	$V_{IN}$	-6 to +40	V
Collector Current	$I_C$	1	A
	$I_{CP}$ *1	2	
Power Dissipation	$P_D$ *2	1.5	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*1  $P_w \leq 10\text{ms}$ , Duty cycle  $\leq 2\%$

\*2 When mounted on 40x40x0.7mm ceramic board.

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Input Voltage	$V_{I(off)}$	$V_{CC} = 5V, I_o = 100 \mu A$			0.3	V
	$V_{I(on)}$	$V_o = 0.4V, I_o = 100\text{mA}$	2			
Output Voltage	$V_{O(on)}$	$I_o/I_i = 500\text{mA}/5\text{mA}$			0.4	V
Input Current	$I_i$	$V_i = 5V$			3.6	mA
Output Current	$I_{O(off)}$	$V_{CC} = 40V, V_i = 0V$			0.5	$\mu A$
DC Current Gain	$G_I$	$V_o = 2V, I_o = 500\text{mA}$	300			
Input Resistance	$R_1$		1.54	2.2	2.86	$k\Omega$
Emitter-base Resistance	$R_2$		7	10	13	$k\Omega$
Transistion Frequency	$f_r$ *	$V_{CE} = 5V, I_E = -0.1A, f = 30\text{MHz}$		80		MHz

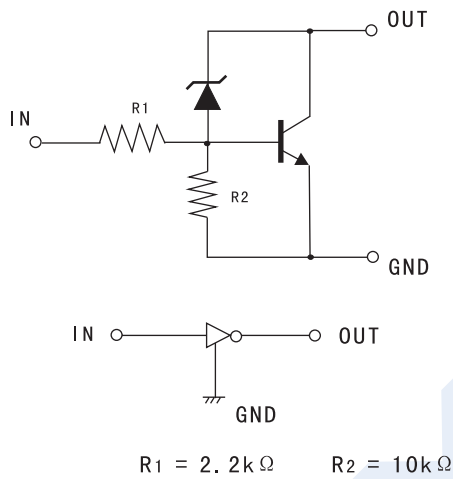
\* Characteristics of built-in transistor

# DTDG23YP

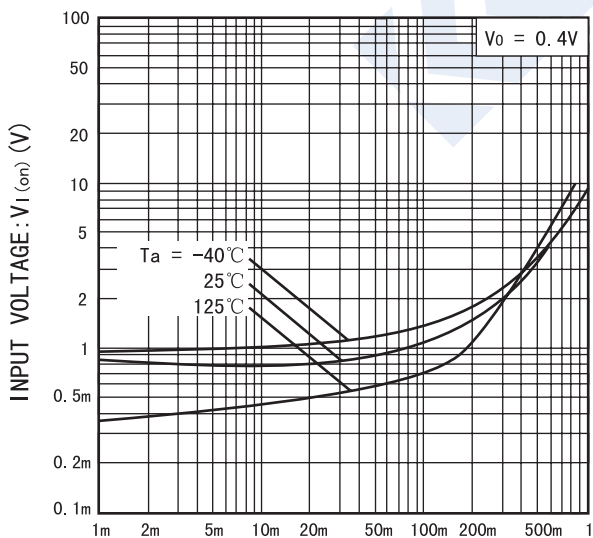
■ Marking

Marking	E02
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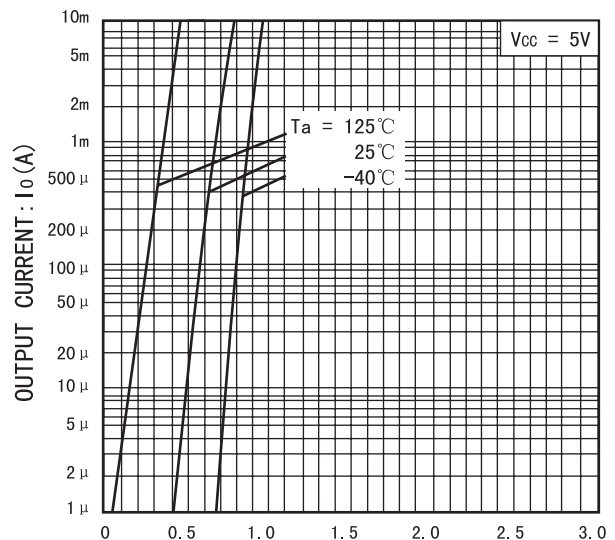
■ Equivalent Circuit



■ Electrical Characteristics Curves



Input voltage vs. output current (ON characteristics)



Output current vs. Input voltage (OFF characteristics)

DTDG23YP

