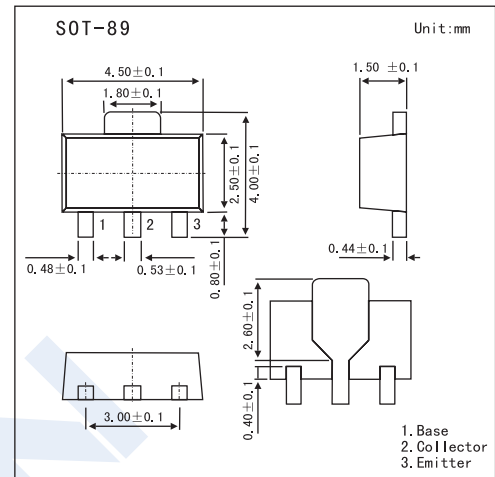


Digital Transistors

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 ± 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	$V_{I(off)}$	$V_{CC} = 5V$, $I_o = 100 \mu\text{A}$			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	μA
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

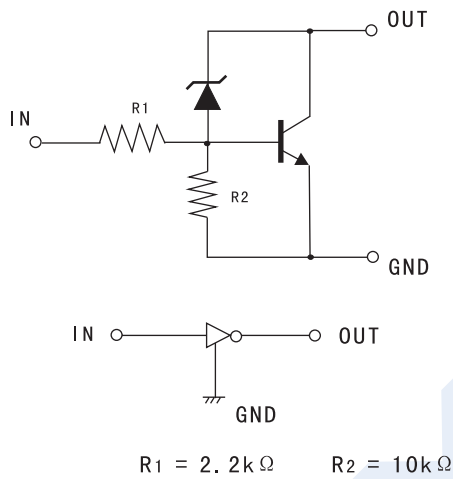
* Characteristics of built-in transistor

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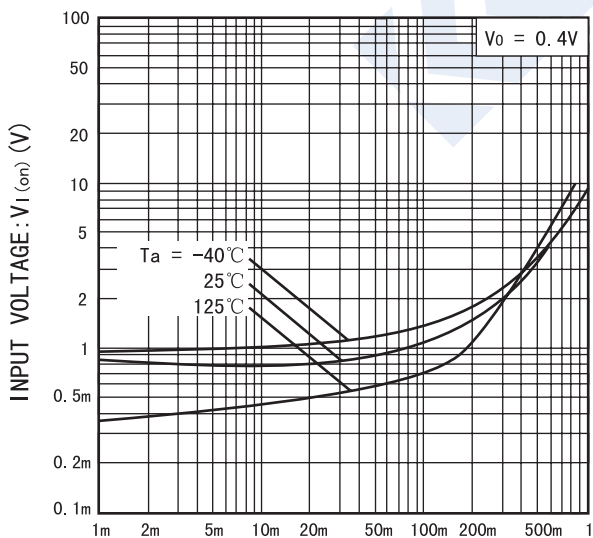
■ Marking

Marking	E02
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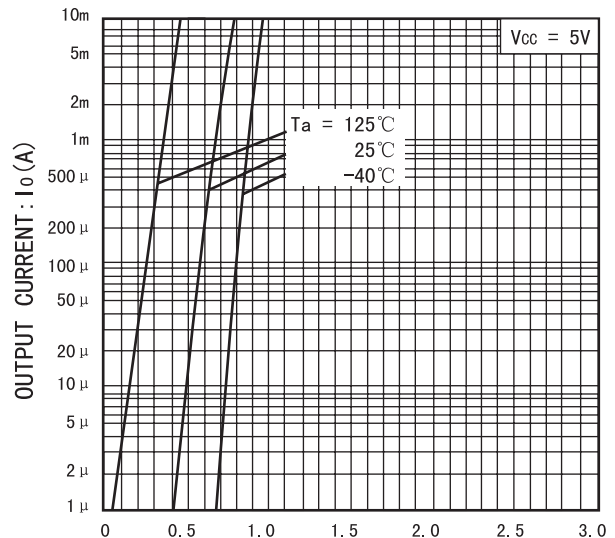
■ Equivalent Circuit



■ Electrical Characteristics Curves

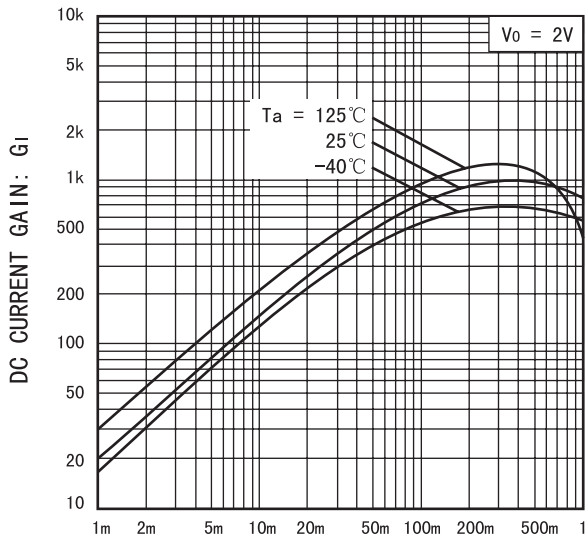


Input voltage vs. output current (ON characteristics)

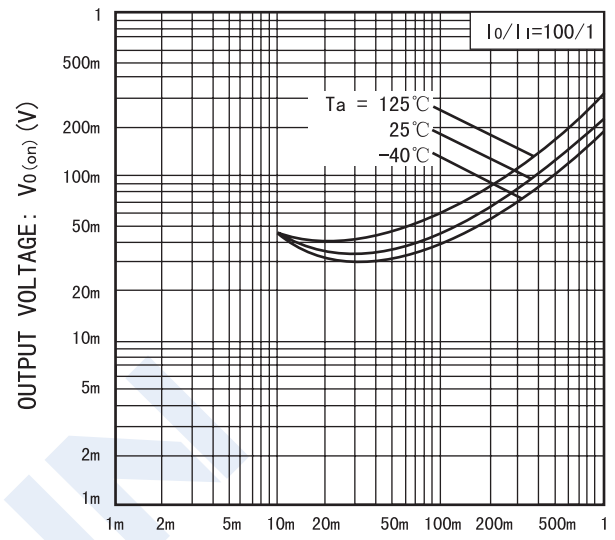


Output current vs. Input voltage (OFF characteristics)

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OUTPUT CURRENT: I_o (A)
DC current gain vs. Output current



OUTPUT CURRENT: I_o (A)
Output voltage vs. Output current