Digital transistor (built-in resistors and zener diode), driver (60V, 1A)

DTDG23YP

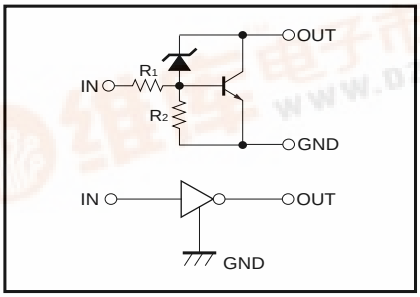
●Features

1) High DC current gain. (Min. 300 at V_O/I_O=2V/0.5A)
2) Low output voltage. (Typ. 0.4V at I_O/I_I=500/50mA)
3) Built-in zener diode gives strong protection against reverse.

●Structure

NPN digital transistor
(with built-in resistors and zener diode)

●Circuit schematic



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Supply voltage	V_{CC}	60±10	V	
Input voltage	V_{IN}	−6 to +40		
Collector current	I_O	1	A	
	$I_{C(Max.)}$	2	A(Pulse)	∗1
Power dissipation	Pd	1.5	W	∗2
Junction temperature	Tj	150	℃	
Storage temperature	Tstg	−55 to +150	℃	

∗1 Pw≤10ms, Duty cycle≤ 2%
∗2 On 40×40×0.7mm ceramic board.

●Package, marking, and packaging specifications

Part No.	DTDG23YP
Package	MPT3
Marking	E02
Packaging code	T100
Basic ordering unit (pieces)	1000

●**External characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.3	V	V_{CC}=5V , I_O=100μA
	$V_{I(on)}$	2	–	–		V_O=0.4V , I_O=100mA
Output voltage	$V_{O(on)}$	–	–	0.4	V	I_O/I_I=500mA/5mA
Input current	I_I	–	–	3.6	mA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=40V , V_I=0V
DC current gain	G_I	300	–	–	–	V_O=2V , I_O=500mA
Transition frequency	f_T	–	80	–	MHz	V_{CE}=5V , I_E= –0.1A , f=30MHz ＊
Input resistance	R_1	1.54	2.2	2.86	kΩ	–
Emitter-base resistance	R_2	7	10	13	kΩ	–

＊Transition frequency of the device.

●**Electrical characteristics curves**

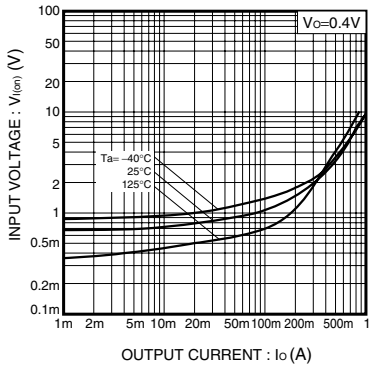


Fig.1 Input voltage vs. output current (ON characteristics)

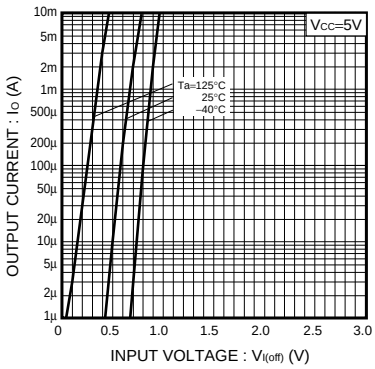


Fig.2 Output current vs. Input voltage (OFF characteristics)

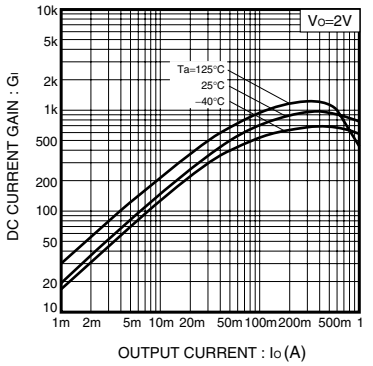


Fig.3 DC current gain vs. Output current

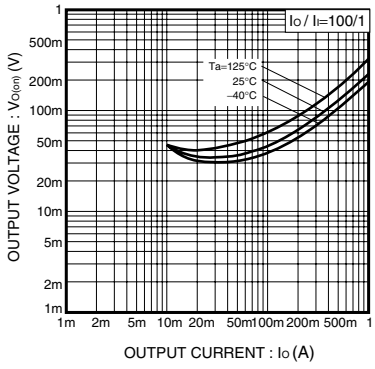


Fig.4 Output voltage vs. Output current

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