

Description

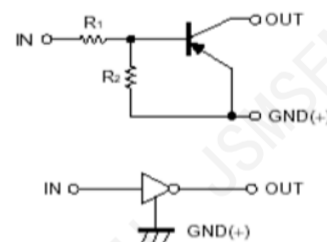
The PDTA114ET,215-JSM are PNP silicon digital transistors with built-in equal bias resistors ($R_1=R_2$). Featuring a compact SOT-23 surface-mounted package, they enable simplified circuit design and reliable digital switching for various electronic systems.

Features

- ◆ Epitaxial planar die construction
- ◆ Built-in equal biasing resistors ($R_1=R_2$)
- ◆ Complementary NPN types available (DTC series)
- ◆ Lead-free version optional
- ◆ Wide junction temperature range ($-55\sim+150^{\circ}\text{C}$)
- ◆ High transition frequency (typ. 250MHz)

Applications

- ◆ Digital Switching Circuits
- ◆ Low-Power Electronic Systems
- ◆ Consumer Electronics
- ◆ General Purpose Digital Applications



Circuit Diagram

Absolute Maximum Ratings($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{CC}	Supply Voltage	-50	V
V_{IN}	Input Voltage	+10 to -40	V
I_O	Output Current	-50	mA
$I_C(\text{Max.})$	Output current	-100	mA
P_D	Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient Air	625	$^{\circ}\text{C}/\text{W}$
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Operating and Storage and Temperature Range	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics (TA=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Input Voltage	$V_{I(off)}$	$V_{CC}=-5V, I_O=-100\mu A$	-0.5	-1.1	-	V
Input Voltage	$V_{I(on)}$	$V_O=-0.3V, I_O=-10mA$	-	-1.9	-3	
Output Voltage	$V_{O(on)}$	$I_O/I_I=-10mA/-0.5mA,$	-	-0.1	-0.3	V
Input Current	I_I	$V_I=-5V$	-	-	-0.88	mA
Output Current	$I_{O(off)}$	$V_{CC}=-50V, V_I=0V$	-	-	-0.5	μA
DC Current Gain	G_I	$V_O=-5V, I_O=-5mA$	30	-	-	
Input Resistor	$R_1(R_2)$		7	10	13	k Ω
Resistance Ratio	R_2/R_1	-	0.8	1	1.2	
Gain-Bandwidth Product	f_T	$V_{CE}=-10V, I_E=5mA,$ $f=100MHz$	-	250	-	MHz

Typical Performance Curves

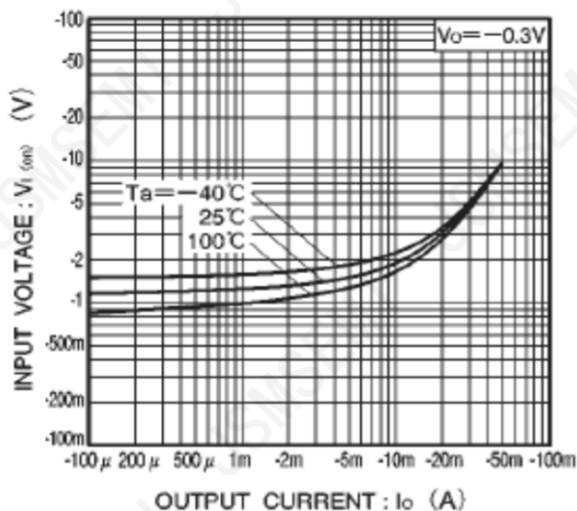


Fig.1 Input voltage vs. output current (ON characteristics)

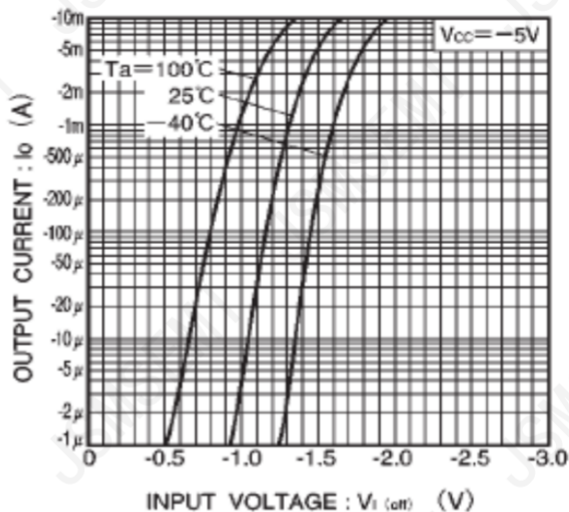


Fig.2 Output current vs. input voltage (OFF characteristics)

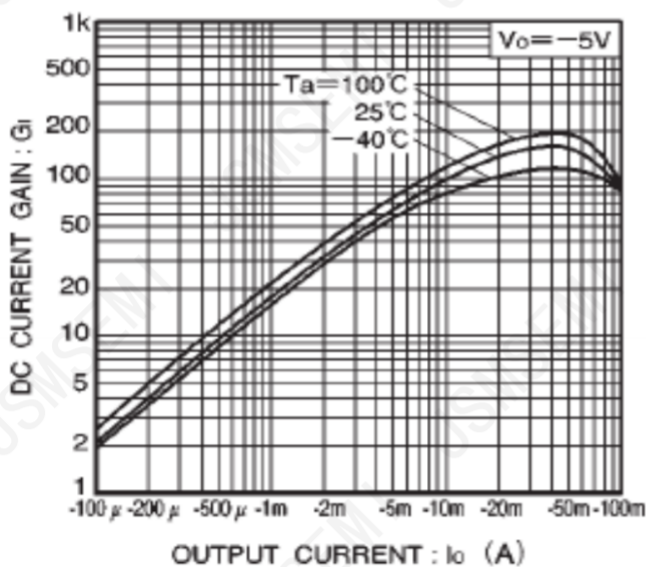
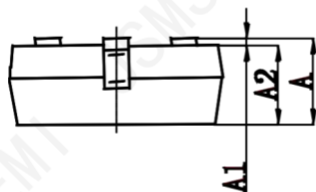
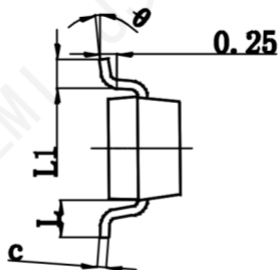
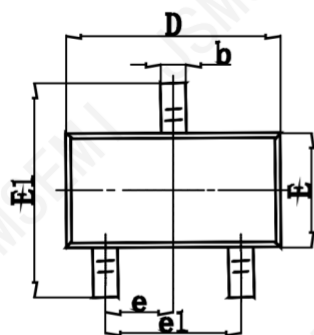


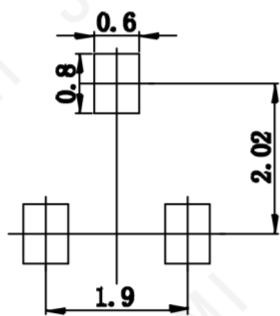
Fig.3 DC current gain vs. output current

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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