

General purpose (dual digital transistors)

EMD3 / UMD3N / IMD3A

●Features

- 1) Both the DTA114E chip and DTC114E chip in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

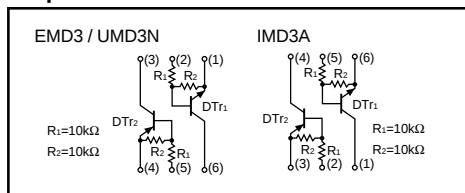
●Structure

Epitaxial planar type

NPN / PNP silicon transistor (Built-in resistor type)

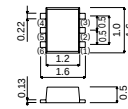
The following characteristics apply to both the DTr1 and DTr2, however, the “-” sign on DTr2 values for the PNP type have been omitted.

●Equivalent circuits



●External dimensions (Units : mm)

EMD3

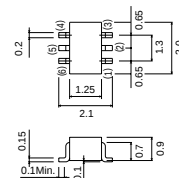


Each lead has same dimensions

ROHM : EMT6

Abbreviated symbol : D3

UMD3N



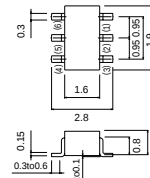
Each lead has same dimensions

ROHM : UMT6

EIAJ : SC-88

Abbreviated symbol : D3

IMD3A



Each lead has same dimensions

ROHM : SMT6

EIAJ : SC-74

Abbreviated symbol : D3

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10	V
		40	
Output current	I_O	50	mA
	$I_C (Max.)$	100	
Power dissipation	EMD3, UMD3N	150 (TOTAL)	mW
	IMD3A	300 (TOTAL)	
Junction temperature	T_J	150	°C
Storage temperature	T_{stg}	-55~+150	°C

*1 120mW per element must not be exceeded.

*2 200mW per element must not be exceeded.

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	0.5	V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$	3	—	—		$V_O=0.3V, I_O=10mA$
Output voltage	$V_{O(on)}$	—	0.1	0.3	V	$I_O=10mA, I_I=0.5mA$
Input current	I_I	—	—	0.88	mA	$V_I=5V$
Output current	$I_{O(off)}$	—	—	0.5	μA	$V_{CC}=50V, V_I=0V$
DC current gain	G_I	30	—	—	—	$V_O=5V, I_O=5mA$
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=10mA, I_E=-5mA, f=100MHz$ *
Input resistance	R_I	7	10	13	k Ω	—
Resistance ratio	R_2/R_1	0.8	1	1.2	—	—

* Transition frequency of the device

●Packaging specifications

Type	Package	Taping		
	Code	T2R	TR	T148
	Basic ordering unit (pieces)	8000	3000	3000
EMD3	○	—	—	—
UMD3N	—	○	—	—
IMD3A	—	—	—	○

●Electrical characteristic curves

DT11 (NPN)

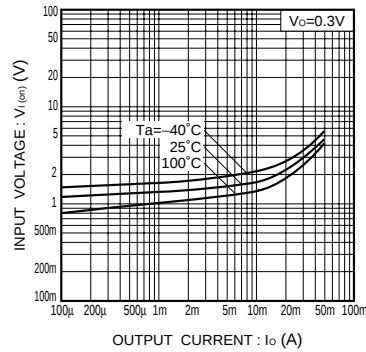


Fig.1 Input voltage vs. output current (ON characteristics)

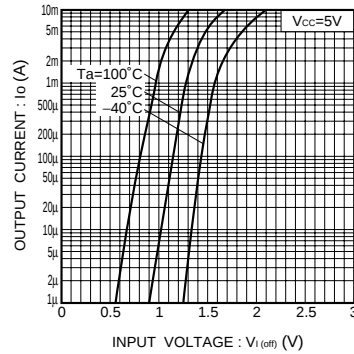


Fig.2 Output current vs. input voltage (OFF characteristics)

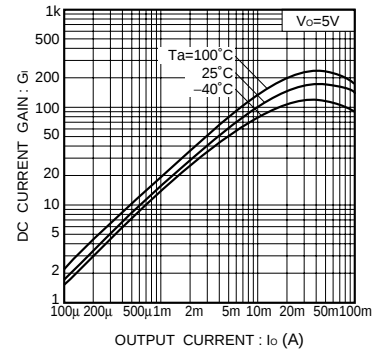


Fig.3 DC current gain vs. output current

Transistors

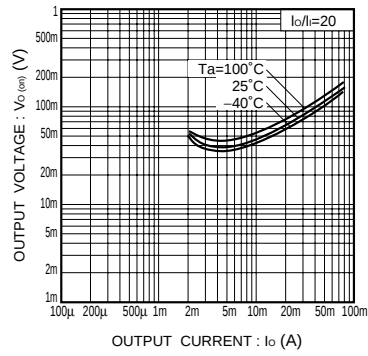


Fig.4 Output voltage vs. output current

DT2 (PNP)

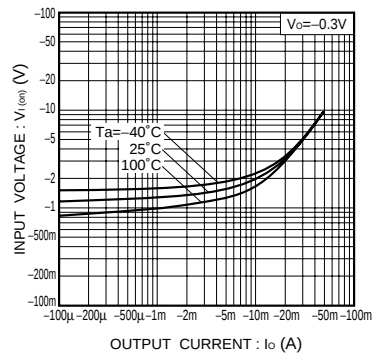


Fig.5 Input voltage vs. output current (ON characteristics)

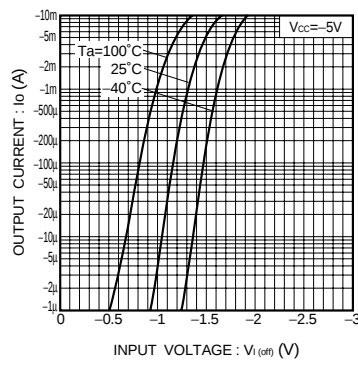


Fig.6 Output current vs. input voltage (OFF characteristics)

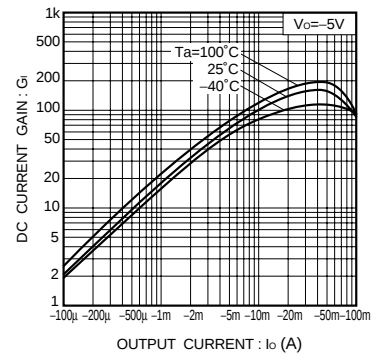


Fig.7 DC current gain vs. output current

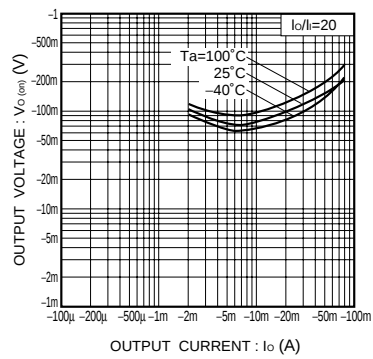


Fig.8 Output voltage vs. output current