

# General purpose (Dual digital transistors)

## EMD3 / UMD3N / IMD3A

**●Features**

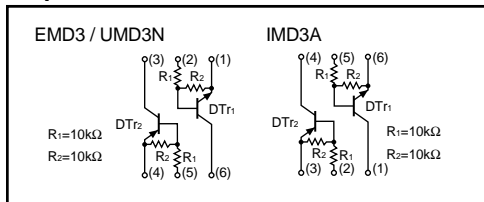
- 1) Both the DTA114E chip and DTC114E chip in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

**●Structure**

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

The following characteristics apply to both the DT<sub>r1</sub> and DT<sub>r2</sub>, however, the “-” sign on DT<sub>r2</sub> values for the PNP type have been omitted.

**●Equivalent circuits**

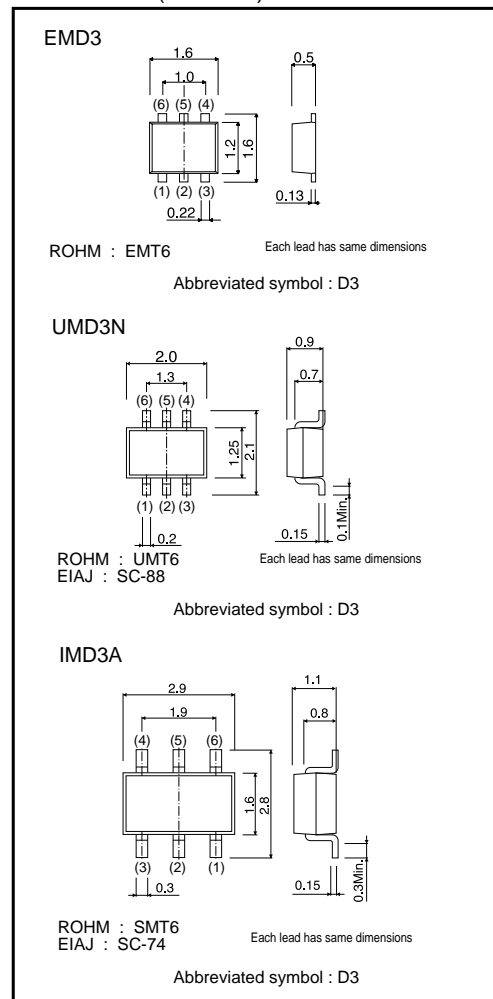


**●Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	50	V
Input voltage	V <sub>IN</sub>	-10	V
		40	
Output current	I <sub>o</sub>	50	mA
	I <sub>C (Max.)</sub>	100	
Power dissipation	EMD3, UMD3N	P <sub>d</sub> 150 (TOTAL)	mW *1
	IMD3A	P <sub>d</sub> 300 (TOTAL)	mW *2
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 120mW per element must not be exceeded.  
\*2 200mW per element must not be exceeded.

**●Dimensions (Unit : mm)**



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	$\mu A$	$V_{CC}=50V, V_i=0V$
DC current gain	$G_i$	30	–	–	–	$V_o=5V, I_o=5mA$
Transition frequency	$f_T$	–	250	–	MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$ *
Input resistance	$R_1$	7	10	13	$k\Omega$	–
Resistance ratio	$R_2/R_1$	0.8	1	1.2	–	–

\* Transition frequency of the device

●Packaging specifications

Type	Package	Taping		
	Code	T2R	TR	T108
	Basic ordering unit (pieces)	8000	3000	3000
EMD3	○	—	—	—
UMD3N	—	○	—	—
IMD3A	—	—	—	○

●Electrical characteristic curves

DT<sub>r1</sub> (NPN)

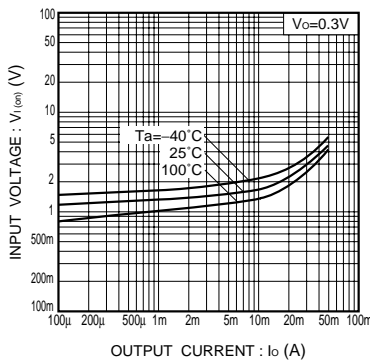


Fig.1 Input voltage vs. output current (ON characteristics)

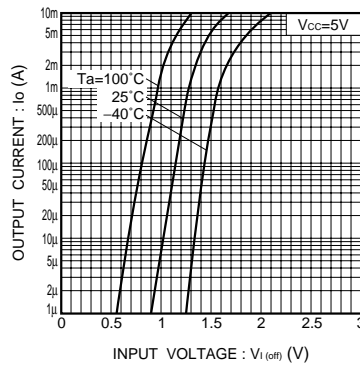


Fig.2 Output current vs. input voltage (OFF characteristics)

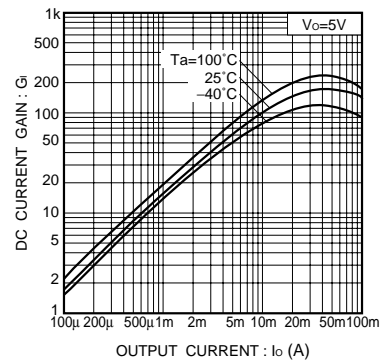


Fig.3 DC current gain vs. output current

Transistors

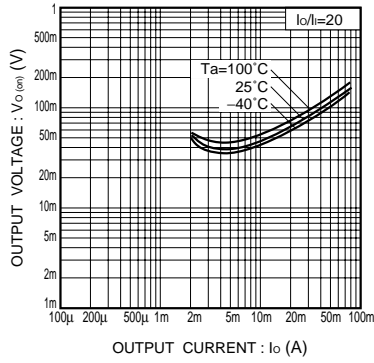


Fig.4 Output voltage vs. output current

DTr2 (PNP)

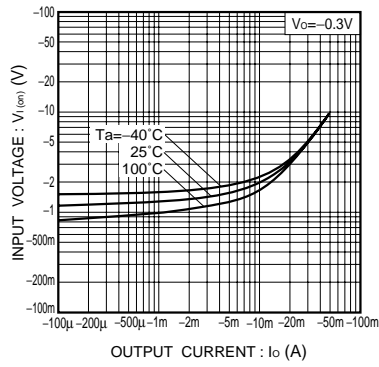


Fig.5 Input voltage vs. output current (ON characteristics)

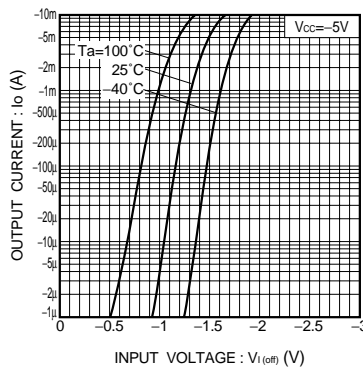


Fig.6 Output current vs. input voltage (OFF characteristics)

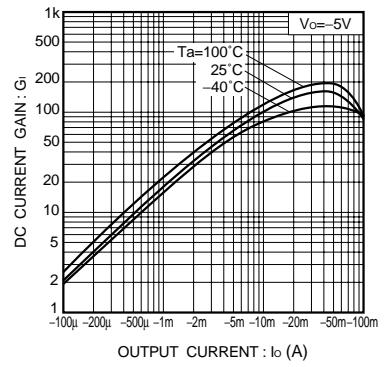


Fig.7 DC current gain vs. output current

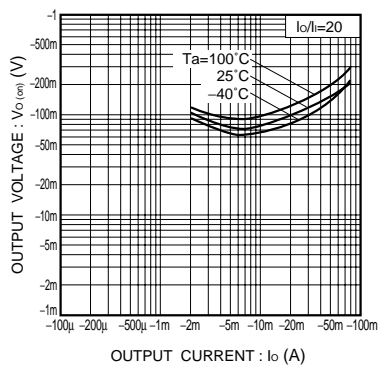


Fig.8 Output voltage vs. output current

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