

General purpose (dual digital transistors)

EMD3 / UMD3N / IMD3A

●Features

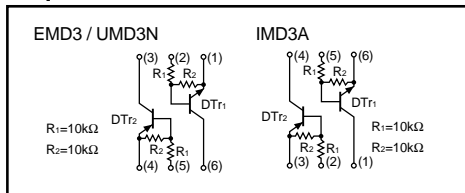
- 1) Both the DTA114E chip and DTC114E chip in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

●Structure

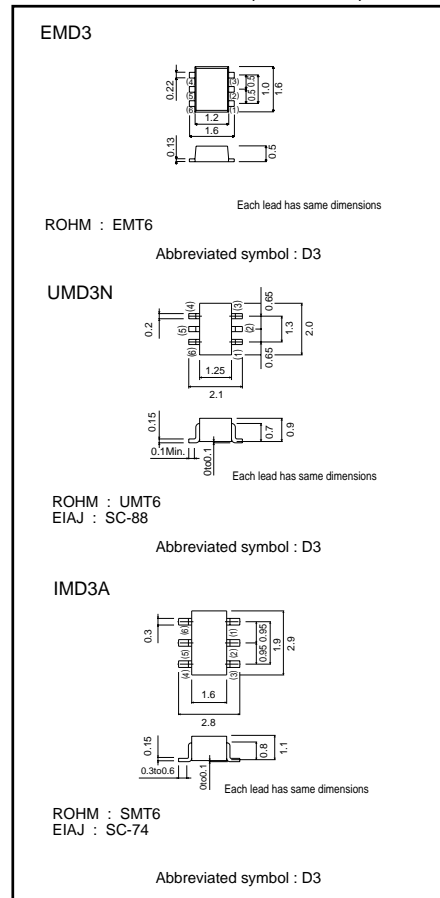
Epitaxial planar type
NPN / PNP silicon transistor (Built-in resistor type)

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)



●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)	*1 mW
	IMD3A	300 (TOTAL)	*2 mW
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_r	–	250	–	MHz	$V_{CE}=10mA, I_E=-5mA, f=100MHz$ *
Input resistance	R_1	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

DT_{r1} (NPN)

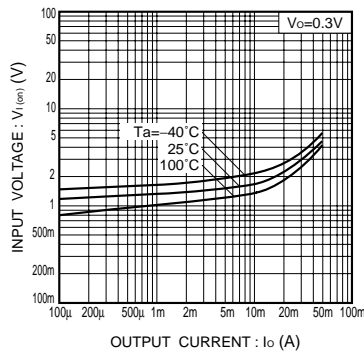


Fig.1 Input voltage vs. output current (ON characteristics)

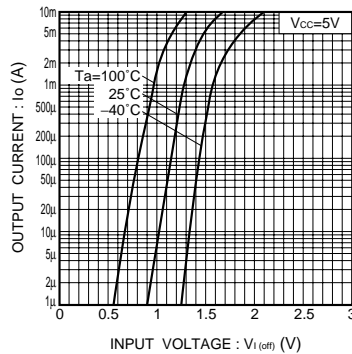


Fig.2 Output current vs. input voltage (OFF characteristics)

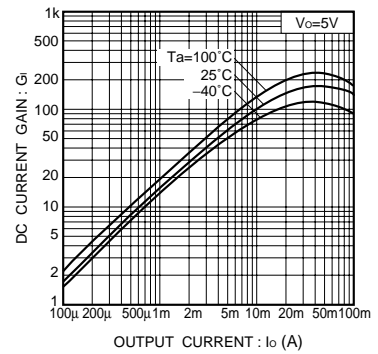


Fig.3 DC current gain vs. output current

Transistors

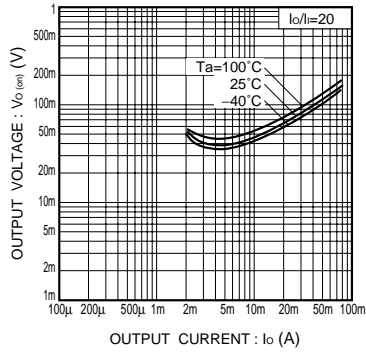


Fig.4 Output voltage vs. output current

DT_{r2} (PNP)

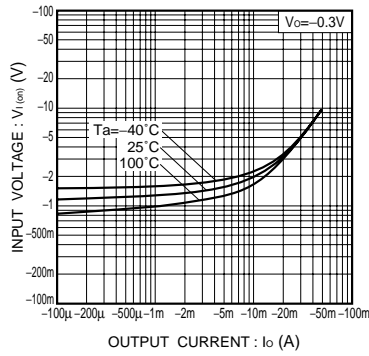


Fig.5 Input voltage vs. output current (ON characteristics)

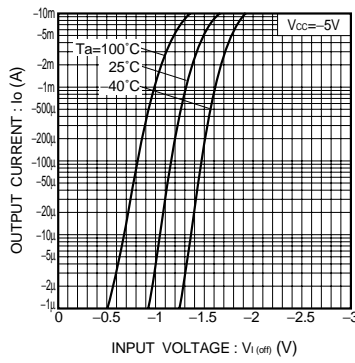


Fig.6 Output current vs. input voltage (OFF characteristics)

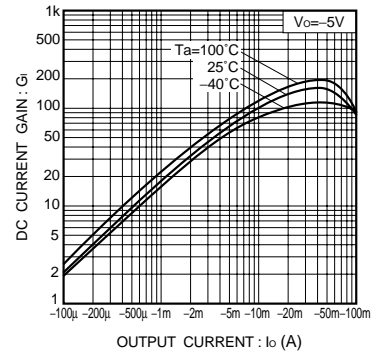


Fig.7 DC current gain vs. output current

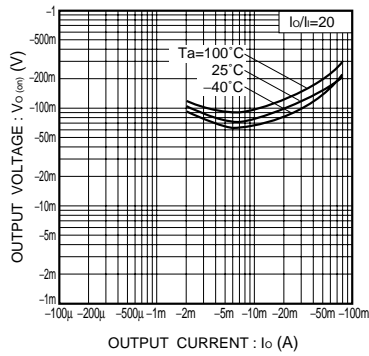


Fig.8 Output voltage vs. output current