General purpose (dual digital transistors)

EMD5 / UMD5N

●Features

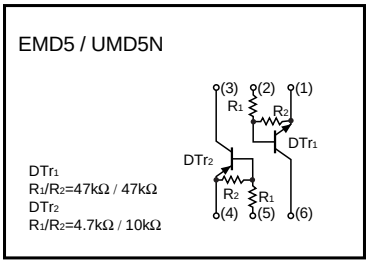
1) Both the DTA143X chip and DTC144E chip in an EMT6 or UMT6 package.
2) Mounting possible with EMT3 or UMT3 automatic mounting machines.
3) Transistor elements are independent, eliminating interference.
4) Mounting cost and area can be cut in half.

●Structure

A PNP and NPN digital transistor
(each with a single built in resistor)

The following characteristics apply to both the DTr_1 and DTr_2, however, the " – " sign on DTr_2 values for the PNP type have been omitted.

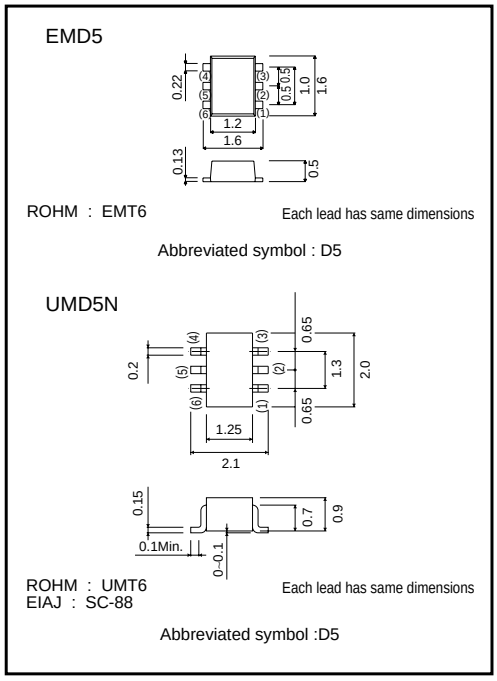
●Equivalent circuit



●Packaging specifications

Type	Package	Taping	
	Code	T2R	TR
	Basic ordering unit (pieces)	8000	3000
EMD5		○	—
UMD5N		—	○

●External dimensions (Unit : mm)



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits		Unit
		DTr1(DTC144E)	DTr2(DTC143X)	
Supply voltage	V_{CC}	50	−50	V
Input voltage	V_{IN}	−10 to +40	−20 to +7	V
Output current	I_O	30	−100	mA
	$I_{C(Max.)}$	100	−100	
Power dissipation	Pd	150(TOTAL)	120(1ELEMENT)	mW
Junction temperature	Tj	150		°C
Storage temperature	Tstg	−55 to +150		°C

●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=100μA
	$V_{I(on)}$	3	–	–		V_O=0.3V, I_O=2mA
Output voltage	$V_{O(on)}$	–	0.1	0.3	V	I_O/I_I=10mA/0.5mA
Input current	I_I	–	–	0.18	mA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=50V, V_I=0V
DC current gain	G_I	68	–	–	–	V_O=5V, I_O=5mA
Input resistance	R_1	32.9	47	61.1	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–
Transition frequency	f_T	–	250	–	MHz	V_{CE}=10V, I_E=−5mA, f=100MHz ＊

＊ Transition frequency of the device

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	−0.3	V	V_{CC}=−5V, I_O=−100μA
	$V_{I(on)}$	−2.5	–	–		V_O=−0.3V, I_O=−20mA
Output voltage	$V_{O(on)}$	–	−0.1	−0.3	V	I_O/I_I=−10mA/−0.5mA
Input current	I_I	–	–	−1.8	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=−10mA
Input resistance	R_1	3.29	4.7	6.11	kΩ	–
Resistance ratio	R_2/R_1	1.7	2.1	2.6	–	–
Transition frequency	f_T	–	250	–	MHz	V_{CE}=−10V, I_E=5mA, f=100MHz ＊

＊ Transition frequency of the device

●**Electrical characteristic curves**

DTr1 (NPN)

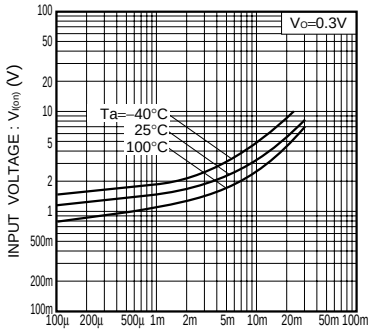


Fig.1 Input voltage vs. output current (ON characteristics)

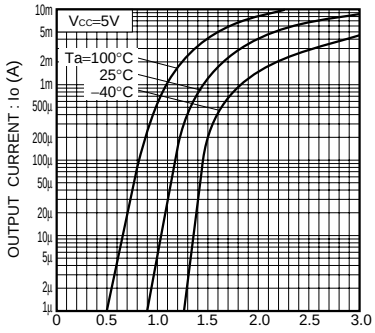


Fig.2 Output current vs. input voltage (OFF characteristics)

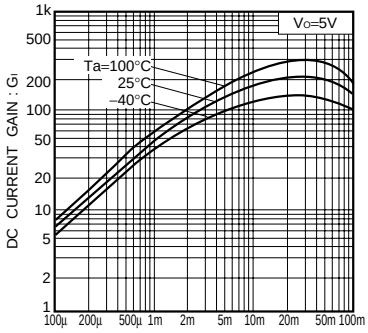


Fig.3 DC current gain vs. output current

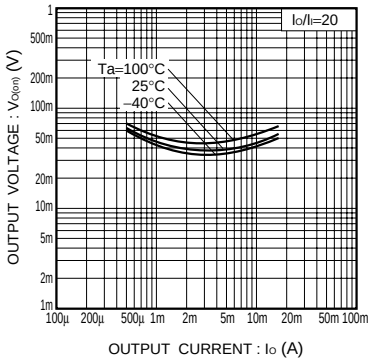


Fig.4 Output voltage vs. output current

DTr2 (PNP)

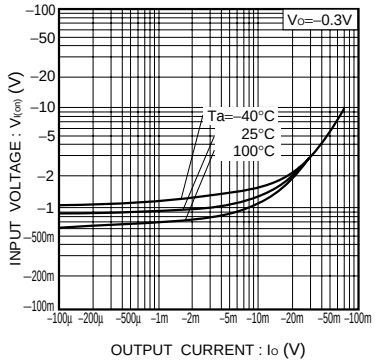


Fig.1 Input voltage vs. output current (ON characteristics)

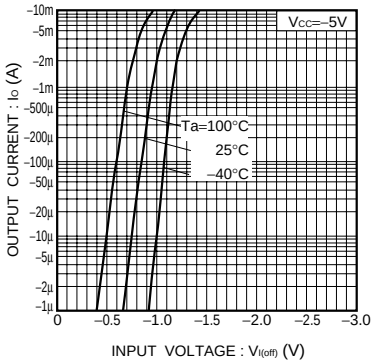


Fig.2 Output current vs. input voltage (OFF characteristics)

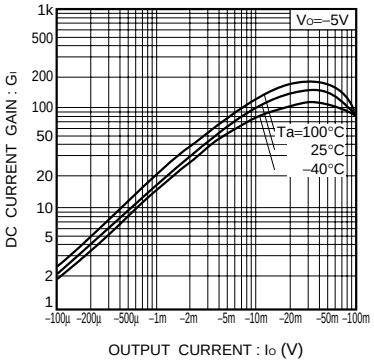


Fig.3 DC current gain vs. output current

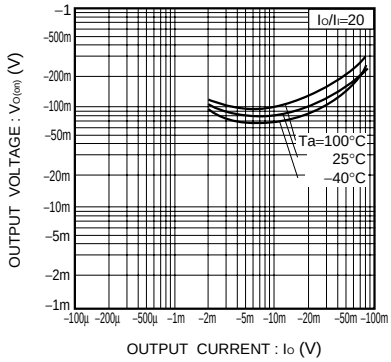


Fig.4 Output voltage vs. output current

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