

# General purpose transistor (isolated transistor and diode)

## EML20

DTC123J□A and RB521S-30 are housed independently in a EMT6 package.

### ●Applications

DC / DC converter  
Motor driver

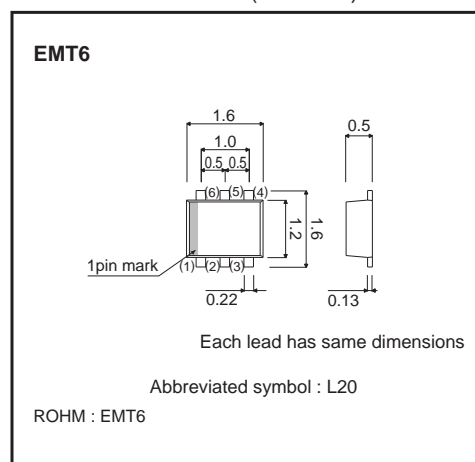
### ●Features

- 1) Tr : NPN digital transistor  
Di : Low  $V_f$
- 2) Mounting possible with EMT3 automatic mounting machines.

### ●Structure

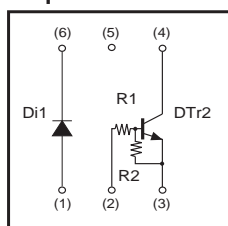
NPN Silicon epitaxial planar digital transistor  
Schottky barrier diode

### ●External dimensions (Unit : mm)



The following characteristics apply to both Di1 and DTr2.

### ●Equivalent circuit



$R_1=2.2k\Omega$ ,  $R_2=47k\Omega$

### ●Packaging specifications

Type	EML20
Package	EMT6
Marking	L20
Code	T2R
Basic ordering unit (pieces)	8000

## Transistors

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

Di1

Parameter	Symbol	Limits	Unit
Average rectified forward current	I <sub>o</sub>	200	mA
Forward current surge peak (60Hz, 1↔)	I <sub>FSM</sub>	1	A
Reverse voltage (DC)	V <sub>R</sub>	30	V
Junction temperature	T <sub>j</sub>	125	°C

DTr2

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	50	V
Input voltage	V <sub>IN</sub>	12	V
		-5	
Output current	I <sub>o</sub>	100	mA
	I <sub>C (MAX.)</sub>	100	mA
Power dissipation	P <sub>d</sub>	120	mW *
Junction temperature	T <sub>j</sub>	150	°C

\* Each terminal mounted on a recommended.

Di1 / DTr2

Parameter	Symbol	Limits	Unit
Power dissipation	P <sub>d</sub>	150	mW *
Storage temperature	T <sub>stg</sub>	-55 to +125	°C

\* Each terminal mounted on a recommended.

## ●Electrical characteristics (Ta=25°C)

Di1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>F</sub>	-	0.40	0.50	V	I <sub>F</sub> =200mA
Reverse current	I <sub>R</sub>	-	4.0	30	μA	V <sub>R</sub> =10V

DTr2

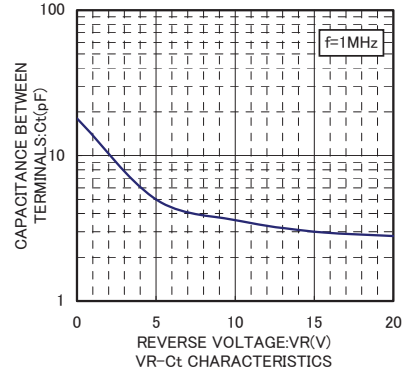
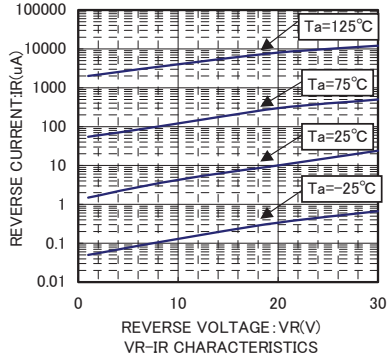
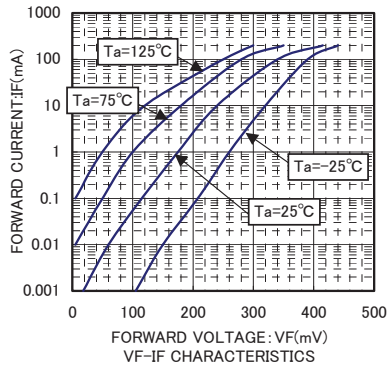
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	-	-	0.5	V	V <sub>CC</sub> =5V / I <sub>o</sub> =100μA
	V <sub>I(on)</sub>	1.1	-	-	V	V <sub>o</sub> =0.3V / I <sub>o</sub> =5mA
Output voltage	V <sub>o(on)</sub>	-	100	300	mV	I <sub>o</sub> =5mA, I <sub>i</sub> =0.25mA
Input current	I <sub>I</sub>	-	-	3.6	mA	V <sub>i</sub> =5V
Output current	I <sub>O(off)</sub>	-	-	500	nA	V <sub>CC</sub> =50V / V <sub>i</sub> =0V
DC current gain	G <sub>I</sub>	80	-	-	-	V <sub>o</sub> =5V / I <sub>o</sub> =10mA
Transition frequency	f <sub>T</sub>	-	250	-	MHz	V <sub>CE</sub> =10V / I <sub>E</sub> =-5mA, f=100MHz
Input resistance	R <sub>1</sub>	1.54	2.2	2.86	kΩ	-
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	17	21	26	-	-

\* Characteristics of built-in transistor.

Transistors

●Electrical characteristic curves

Di1



DTr2

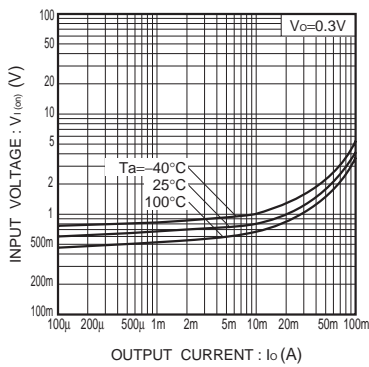


Fig.1 Input voltage vs. output current (ON characteristics)

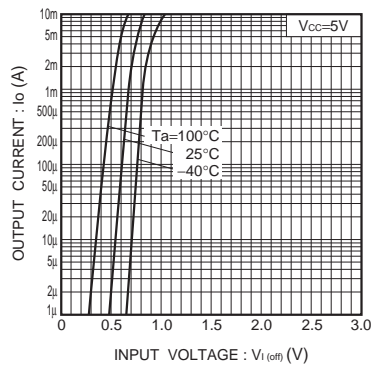


Fig.2 Output current vs. input voltage (OFF characteristics)

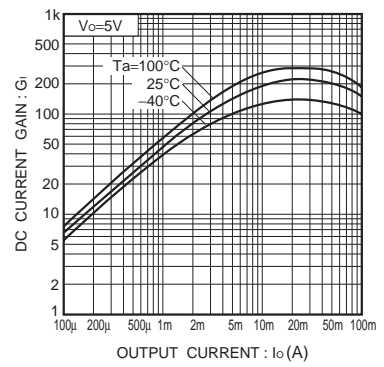


Fig.3 DC current gain vs. output current

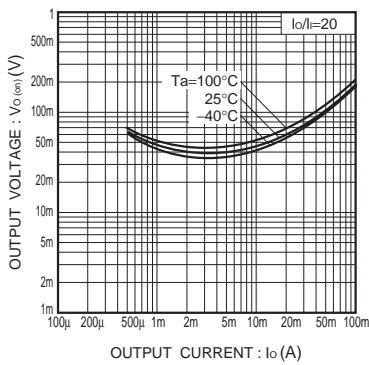


Fig.4 Output voltage vs. output current

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