Power management (dual transistors) **EMF5**

2SA2018 and DTC144EE are housed independently in a EMT6 package.

Application

Power management circuit

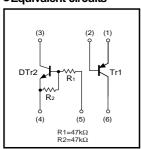
● Features

- 1) Power switching circuit in a single package.
- 2) Mounting cost and area can be cut in half.

●Structure

Silicon epitaxial planar transistor

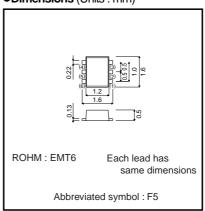
Equivalent circuits



Packaging specifications

Туре	EMF5
Package	EMT6
Marking	F5
Code	T2R
Basic ordering unit (pieces)	8000

●Dimensions (Units: mm)



ROHM

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	Vсво	-15	V
Collector-emitter voltage	Vceo	-12	V
Emitter-base voltage	Vево	-6	V
Collector current	Ic	-500	mA
	ICP	-1.0	A *1
Power dissipation	Pc	150(TOTAL)	mW *2
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	-55~+150	°C

DTr2

Parameter	Symbol	Limits	Unit	
Supply voltage	Vcc	50	V	
Input voltage	Vin	-10 ~ +40	V	
Collector current	Ic	100	mA *1	
Output current	lo	30	mA	
Power dissipation	Pc	150(TOTAL)	mW *2	
Junction temperature	Tj	150	°C	
Range of storage temperature	Tstg	−55~+150	°C	

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BVceo	-12	_	_	V	Ic=-1mA
Collector-base breakdown voltage	ВУсво	-15	_	_	V	Ic=-10μA
Emitter-base breakdown voltage	ВVево	-6	_	_	V	Iε=-10μA
Collector cut-off current	Ісво	_	_	-100	nA	VcB=-15V
Emitter cut-off current	ІЕВО	_	_	-100	nA	V _{EB} =-6V
Collector-emitter saturation voltage	VCE(sat)	_	-100	-250	mV	Ic=-200mA, Iв=-10mA
DC current gain	hfe	270	_	680	_	Vce=-2V, Ic=-10mA
Transition frequency	f⊤	_	260	_	MHz	Vce=-2V, Ie=10mA, f=100MHz
Collector output capacitance	Cob	_	6.5	_	pF	Vcb=-10V, Ie=0mA, f=1MHz

DTr2

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	0.5	V	Vcc=5V, Io=100μA
	VI(on)	3.0	_	_	V	Vo=0.3V, Io=2mA
Output voltage	Vo(on)	_	100	300	mV	Vo=10mA, I:=0.5mA
Input current	lı	_	_	180	μΑ	Vi=5V
Output current	IO(off)	_	_	500	nA	Vcc=50V, Vi=0V
DC current gain	Gı	68	_	_	_	Vo=5V, Io=5mA
Transition frequency	f⊤	_	250	_	MHz	Vc=10V, I=-5mA, f=100MHz *
Input resistance	R ₁	32.9	47	61.1	kΩ	_
Resistance ratio	R2/R1	0.8	1.0	1.2	_	_

^{*}Characteristics of built-in transistor.

^{*1} Single pulse Pw=1ms
*2 120mW per element must not be exceeded.
Each terminal mounted on a recommended land.

^{*1} Characteristics of built-in transistor.
*2 120mW per element must not be exceeded.
Each terminal mounted on a recommended land.

•Electrical characteristic curves

Tr1

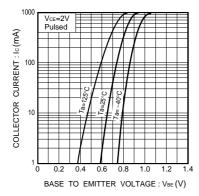


Fig.1 Grounded emitter propagation characteristics

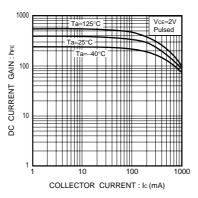


Fig.2 DC current gain vs. collector current

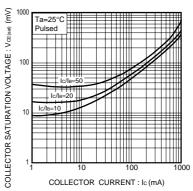


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

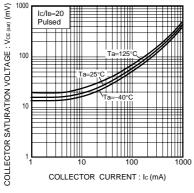


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

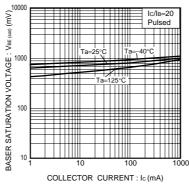


Fig.5 Base-emitter saturation voltage vs. collector current

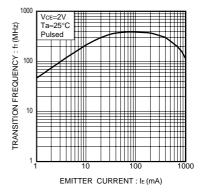


Fig.6 Gain bandwidth product vs. emitter current

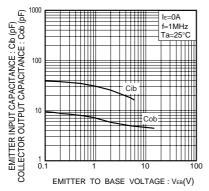


Fig.7 Collector output capacitance vs. collector-base voltage Emitter input capacitance vs. emitter-base voltage

DTr2

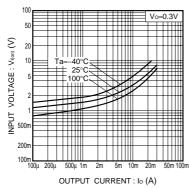


Fig.9 Input voltage vs. output current (ON characteristics)

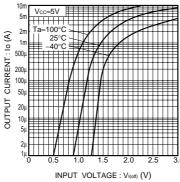


Fig.10 Output current vs. input voltage (OFF characteristics)

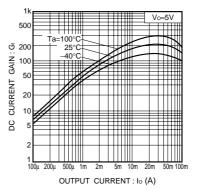


Fig.11 DC current gain vs. output

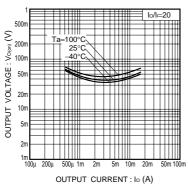


Fig.12 Output voltage vs. output current

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any
 means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the
 product described in this document are for reference only. Upon actual use, therefore, please request
 that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard
 use and operation. Please pay careful attention to the peripheral conditions when designing circuits
 and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or
 otherwise dispose of the same, no express or implied right or license to practice or commercially
 exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

Thank you for your accessing to ROHM product informations.

More detail product informations and catalogs are available, please contact your nearest sales office.

ROHM Customer Support System

THE AMERICAS / EUROPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster@rohm.co.jp

Copyright © 2008 ROHM CO.,LTD.

ROHM CO., LTD. 21 Saiin Mizosaki-cho, Ukyo-ku, Kyoto 615-8585, Japan

pan TEL:+81-75-311-2121 FAX:+81-75-315-0172

