Power management (dual transistors) EMF8

2SC5585 and DTC144EE are housed independently in a EMT6 package.

Application

Power management circuit

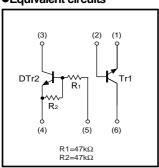
● Features

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

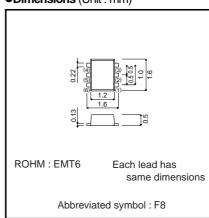
●Structure

Silicon epitaxial planar transistor

Equivalent circuits



●Dimensions (Unit:mm)



Package, marking, and packaging specifications

Туре	EMF8
Package	EMT6
Marking	F8
Code	T2R
Basic ordering unit (pieces)	8000

Rev.B

● Absolute maximum ratings (Ta=25°C)

Tr1

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

DTr2

Parameter	Symbol	Limits	Unit	
Supply voltage	Vcc	50	V	
Input voltage	Vin	-10 to +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 to +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	ВУЕВО	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⊤	_	320	_	MHz	Vce=2V, Ie=-10mA, f=100MHz
Collector output capacitance	Cob	_	7.5	_	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

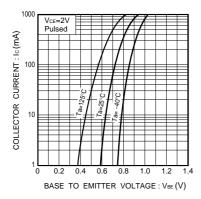


Fig.1 Grounded emitter propagation characteristics

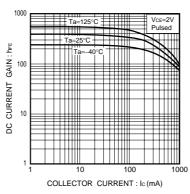


Fig.2 DC current gain vs. collector current

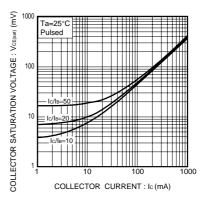


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

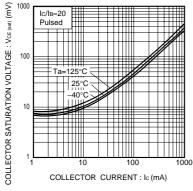


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

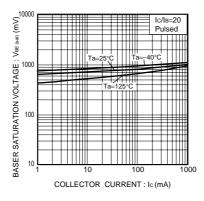


Fig.5 Base-emitter saturation voltage vs. collector current

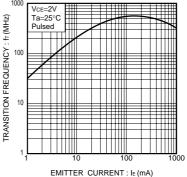


Fig.6 Gain bandwidth product vs. emitter current

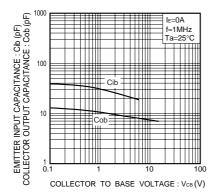


Fig.7 Collector output capacitance vs. collector-base voltage Emitter input capacitance vs. emitter-base voltage

DTr2

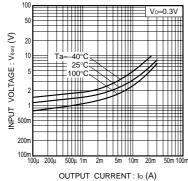


Fig.9 Input voltage vs. output current (ON characteristics)

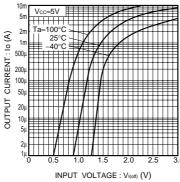


Fig.10 Output current vs. input voltage (OFF characteristics)

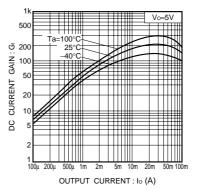


Fig.11 DC current gain vs. output

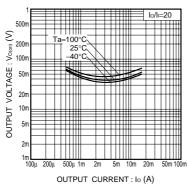


Fig.12 Output voltage vs. output current

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