Power management (dual transistors) UMF5N

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

Application

Power management circuit

Features

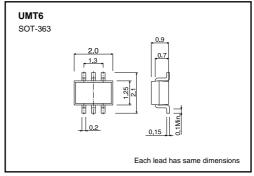
1) Power switching circuit in a single package.

2) Mounting cost and area can be cut in half.

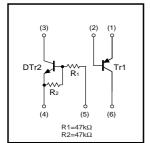
Structure

Silicon epitaxial planar transistor

•Dimensions (Units : mm)



Equivalent circuits



Packaging specifications

Туре	UMF5N
Package	UMT6
Marking	F5
Code	TR
Basic ordering unit (pieces)	3000



Transistors

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	Vebo	-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~+150	°C

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

DTr2

Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	50	V
Input voltage	Vin	-10 to +40	V
Collector current	lc	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

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

●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	Ιε=-10μΑ
Collector cut-off current	Ісво	-	-	-100	nA	Vcb=-15V
Emitter cut-off current	Іево	-	-	-100	nA	Veb=-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

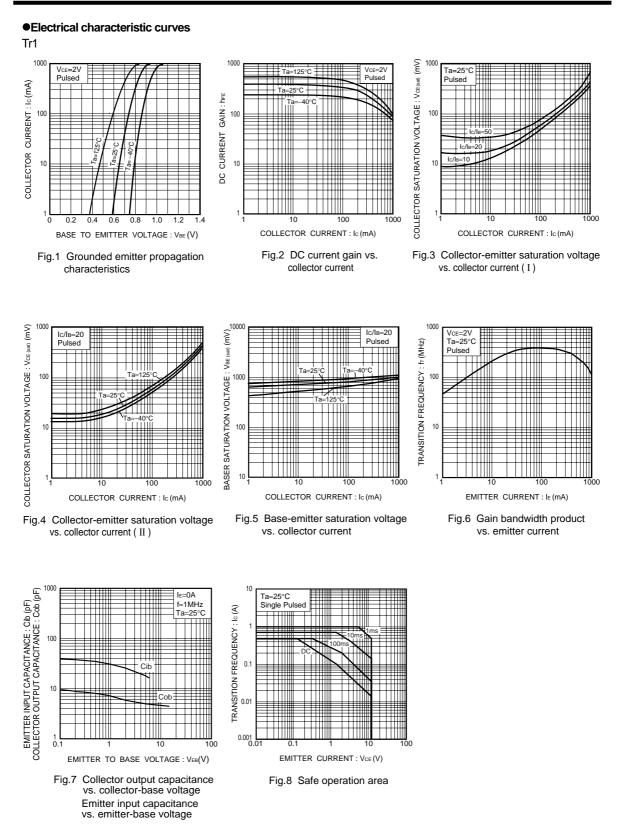
DTr2

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, II=0.5mA
Input current	h	-	-	180	μA	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	Vce=10V, Ie=-5mA, f=100MHz *
Input resistance	R1	32.9	47	61.1	kΩ	_
Resistance ratio	R2/R1	0.8	1.0	1.2	-	_

*Characteristics of built-in transistor.

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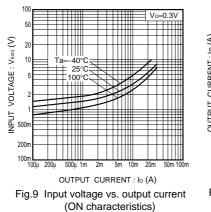
Transistors

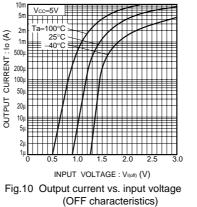


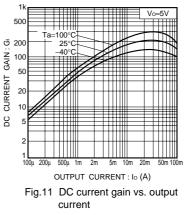
ROHM

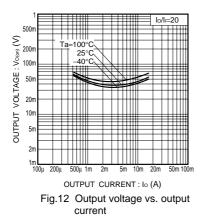
Transistors











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Appendix1-Rev2.0

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