



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Power management (dual transistors)

UMF6N

2SA2018 and 2SK3019 are housed independently in a UMT package.

●Application

Power management circuit

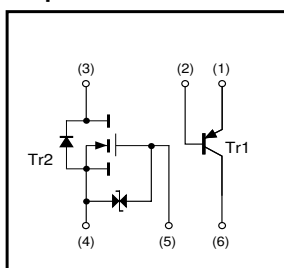
●Features

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

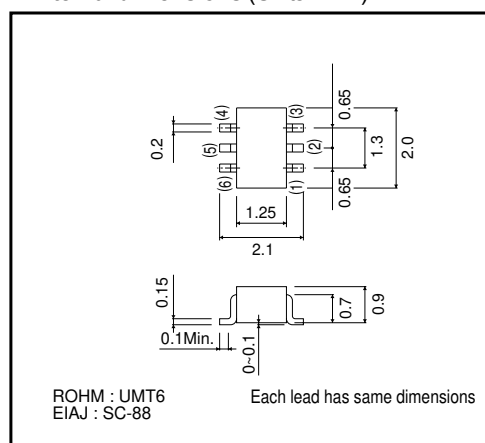
●Structure

Silicon epitaxial planar transistor

●Equivalent circuits



●External dimensions (Units : mm)



●Packaging specifications

Type	UMF6N
Package	UMT6
Marking	F6
Code	TR
Basic ordering unit (pieces)	3000

Transistors

●Absolute maximum ratings (Ta=25°C)

Tr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CB0}	-15	V
Collector-emitter voltage	V _{CEO}	-12	V
Emitter-base voltage	V _{EBO}	-6	V
Collector current	I _C	-500	mA
	I _{CP}	-1.0	A *1
Power dissipation	P _C	150(TOTAL)	mW *2
Junction temperature	T _j	150	°C
Range of storage temperature	T _{stg}	-55~+150	°C

*1 Single pulse P_W=1ms

*2 120mW per element must not be exceeded. Each terminal mounted on a recommended land.

Tr2

Parameter	Symbol	Limits	Unit	
Drain-source voltage	V _{DSS}	30	V	
Gate-source voltage	V _{GSS}	±20	V	
Drain current	Continuous	I _D	100	mA
	Pulsed	I _{DP}	200	mA *1
Reverse drain current	Continuous	I _{DR}	100	mA
	Pulsed	I _{DRP}	200	mA *1
Total power dissipation	P _D	150(TOTAL)	mW *2	
Channel temperature	T _{ch}	150	°C	
Range of storage temperature	T _{stg}	-55~+150	°C	

*1 P_W≤10ms Duty cycles≤50%

*2 120mW per element must not be exceeded. Each terminal mounted on a recommended land.

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV _{CEO}	-12	-	-	V	I _C =-1mA
Collector-base breakdown voltage	BV _{CB0}	-15	-	-	V	I _C =-10μA
Emitter-base breakdown voltage	BV _{EBO}	-6	-	-	V	I _E =-10μA
Collector cut-off current	I _{CB0}	-	-	-100	nA	V _{CB} =-15V
Emitter cut-off current	I _{EBO}	-	-	-100	nA	V _{EB} =-6V
Collector-emitter saturation voltage	V _{CE(sat)}	-	-100	-250	mV	I _C =-200mA, I _B =-10mA
DC current gain	h _{FE}	270	-	680	-	V _{CE} =-2V, I _C =-10mA
Transition frequency	f _T	-	260	-	MHz	V _{CE} =-2V, I _E =10mA, f=100MHz
Collector output capacitance	C _{ob}	-	6.5	-	pF	V _{CB} =-10V, I _E =0mA, f=1MHz

Tr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	-	-	±1	μA	V _{GS} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DSS}	30	-	-	V	I _D =10μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	-	-	1.0	μA	V _{DS} =30V, V _{GS} =0V
Gate-threshold voltage	V _{GS(th)}	0.8	-	1.5	V	V _{DS} =3V, I _D =100μA
Static drain-source on-state resistance	R _{DS(on)}	-	5	8	Ω	I _D =10mA, V _{GS} =4V
		-	7	13	Ω	I _D =1mA, V _{GS} =2.5V
Forward transfer admittance	Y _{fs}	20	-	-	ms	V _{DS} =3V, I _D =10mA
Input capacitance	C _{iss}	-	13	-	pF	V _{DS} =5V, V _{GS} =0V, f=1MHz
Output capacitance	C _{oss}	-	9	-	pF	
Reverse transfer capacitance	C _{rss}	-	4	-	pF	
Turn-on delay time	t _{d(on)}	-	15	-	ns	
Rise time	t _r	-	35	-	ns	I _D =10mA, V _{DD} =5V, V _{GS} =5V, R _L =500Ω, R _{GS} =10Ω
Turn-off delay time	t _{d(off)}	-	80	-	ns	
Fall time	t _f	-	80	-	ns	

Transistors

●Electrical characteristic curves

Tr1

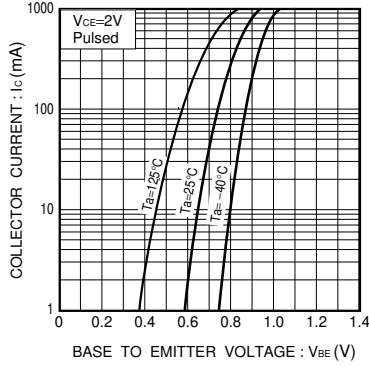


Fig.1 Grounded emitter propagation characteristics

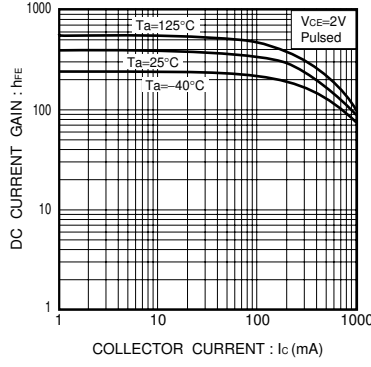


Fig.2 DC current gain vs. collector current

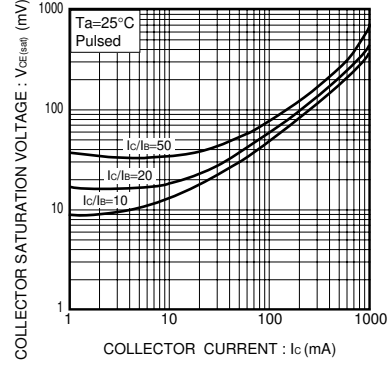


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

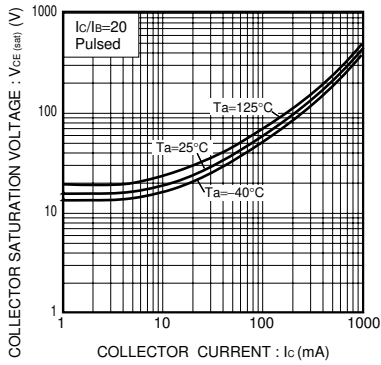


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

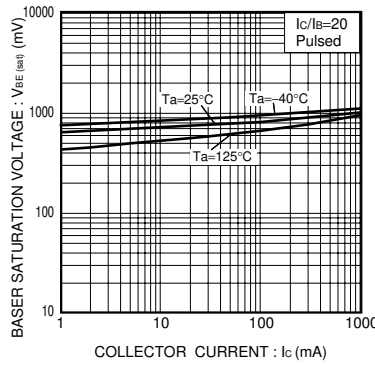


Fig.5 Base-emitter saturation voltage vs. collector current

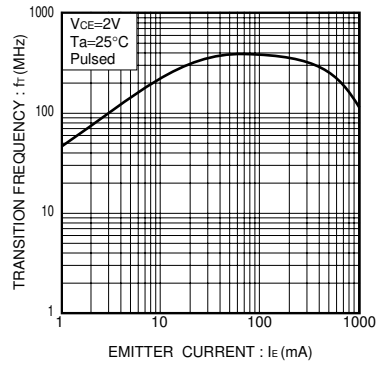


Fig.6 Gain bandwidth product vs. emitter current

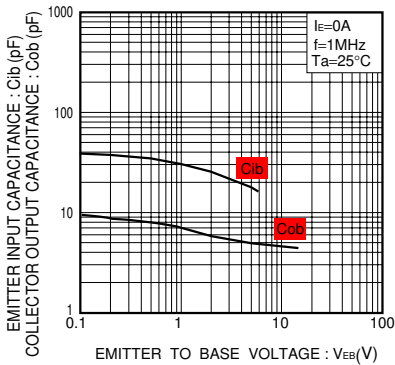


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

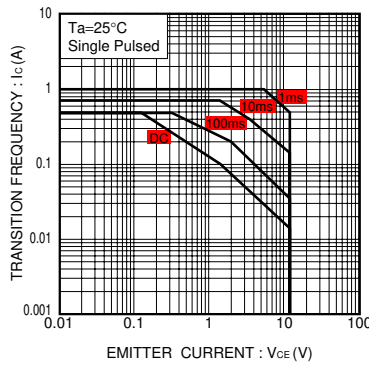


Fig.8 Safe operation area

Transistors

Tr2

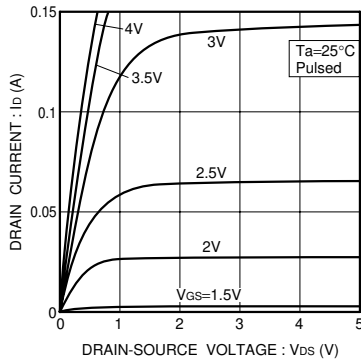


Fig.9 Typical output characteristics

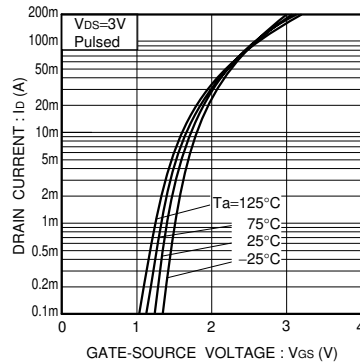


Fig.10 Typical transfer characteristics

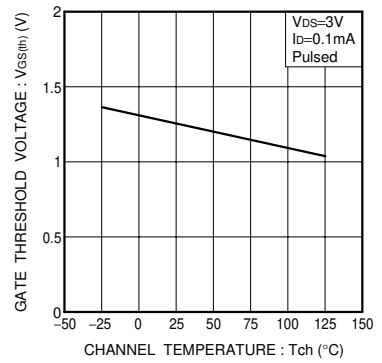


Fig.11 Gate threshold voltage vs. channel temperature

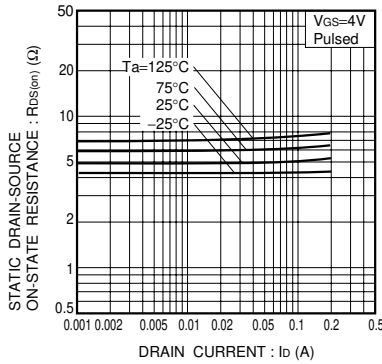


Fig.12 Static drain-source on-state resistance vs. drain current (I)

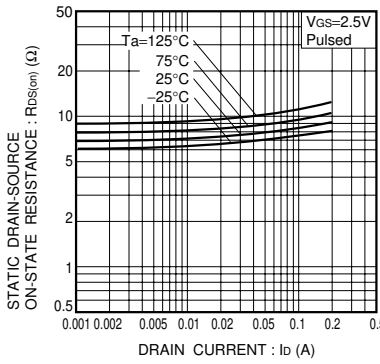


Fig.13 Static drain-source on-state resistance vs. drain current (II)

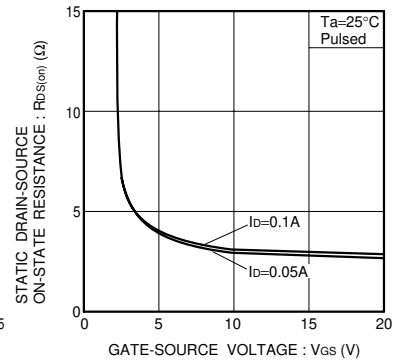


Fig.14 Static drain-source on-state resistance vs. gate-source voltage

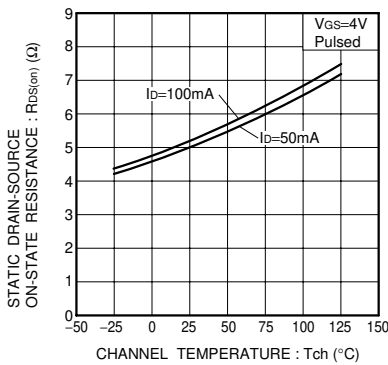


Fig.15 Static drain-source on-state resistance vs. channel temperature

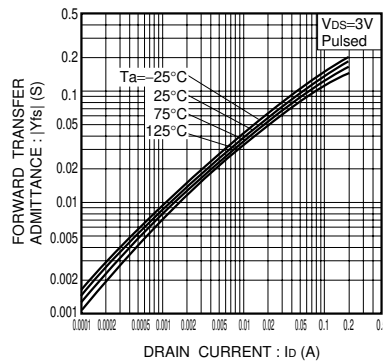


Fig.16 Forward transfer admittance vs. drain current

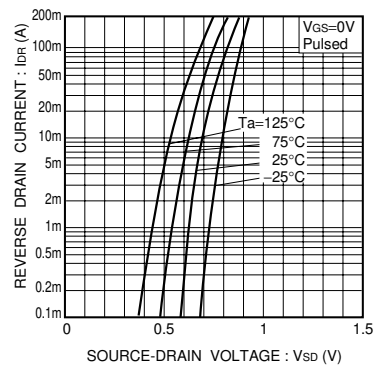


Fig.17 Reverse drain current vs. source-drain voltage (I)

Transistors

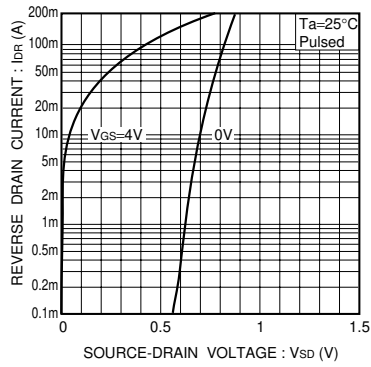


Fig.18 Reverse drain current vs. source-drain voltage (II)

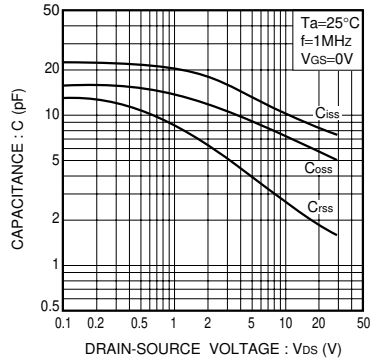


Fig.19 Typical capacitance vs. drain-source voltage

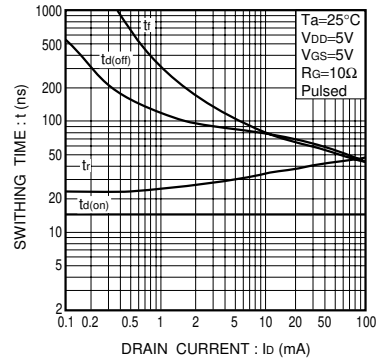


Fig.20 Switching characteristics