

Power Management(dual transistors)

●Application

Power management circuit

●Features

- 1) Power switching circuit in a single package.
- 2) Mounting cost and area can be cut in half.
- 3) We declare that the material of product compliance with RoHS requirements.
- 3) S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

●Structure

Silicon epitaxial planar transistor

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LUMF23NDW1T1G S-LUMF23NDW1T1G	F23	3000/Tape&Reel
LUMF23NDW1T3G S-LUMF23NDW1T3G	F23	10000/Tape&Reel

●Absolute maximum ratings (Ta=25°C)

Tr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CBO}	-60	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EBO}	-6	V
Collector current	I _c	-150	mA
Collector power dissipation	P _c	150 (TOTAL)	mW *
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* 120mW per element must not be exceeded.

Tr2

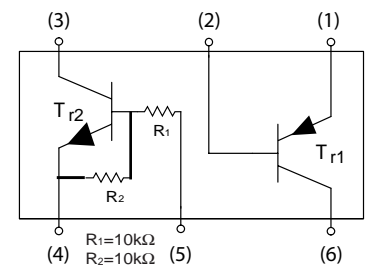
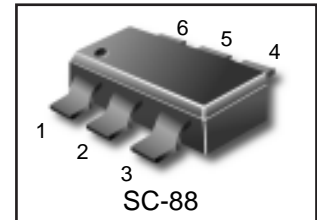
Parameter	Symbol	Limits	Unit
Supply voltage	V _{cc}	50	V
Input voltage	V _{IN}	-10~+40	V
Collector current	I _c	100	mA *1
Output current	I _o	50	mA
Power dissipation	P _c	150(TOTAL)	mW *2
Junction temperature	T _j	150	°C
Range of storage temperature	T _{stg}	-55 to +150	°C

*1 Characteristics of built-in transistor.

*2 120mW per element must not be exceeded.

Each terminal mounted on a recommended land.

LUMF23NDW1T1G
S-LUMF23NDW1T1G



LUMF23NDW1T1G ;S-LUMF23NDW1T1G

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	-60	-	-	V	I _C =-50μA
Collector-emitter breakdown voltage	BV _{CEO}	-50	-	-	V	I _C =-1mA
Emitter-base breakdown voltage	BV _{EBO}	-6	-	-	V	I _E =-50μA
Collector cutoff current	I _{CBO}	-	-	-0.1	μA	V _{CB} =-60V
Emitter cutoff current	I _{EBO}	-	-	-0.1	μA	V _{EB} =-6V
Collector-emitter saturation voltage	V _{CE(sat)}	-	-	-0.5	V	I _C /I _B =-50mA/-5mA
DC current transfer ratio	h _{FE}	180	-	390	-	V _{CE} =-6V, I _C =-1mA
Transition frequency	f _T	-	140	-	MHz	V _{CE} =-12V, I _E =2mA, f=100MHz
Output capacitance	C _{ob}	-	4	5	pF	V _{CB} =-12V, I _E =0A, f=1MHz

Tr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	-	-	0.5	V	V _{CC} =5V, I _O =100μA
	V _{I(on)}	3	-	-		V _O =0.3V, I _O =10mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	I _O /I _I =10mA/0.5mA
Input current	I _I	-	-	0.88	mA	V _I =5V
Output current	I _{O(off)}	-	-	0.5	μA	V _{CC} =50V, V _I =0V
DC current gain	G _I	30	-	-	-	V _O =5V, I _O =5mA
Input resistance	R _I	7	10	13	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Transition frequency	f _T	-	250	-	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz *

* Transition frequency of the device

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●Electrical characteristic curves

Tr1

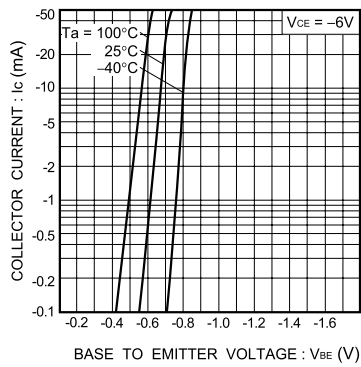


Fig.1 Grounded emitter propagation characteristics

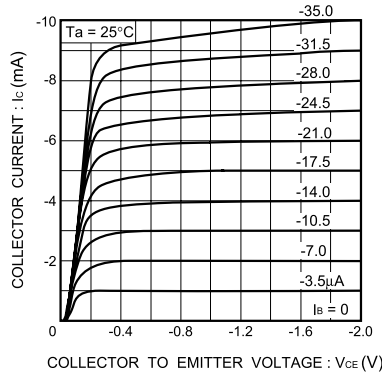


Fig.2 Grounded emitter output characteristics (I)

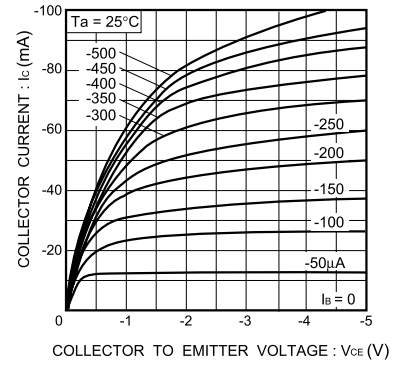


Fig.3 Grounded emitter output characteristics (II)

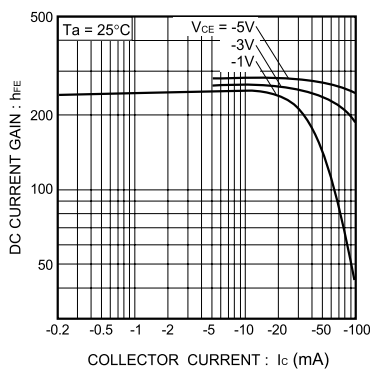


Fig.4 DC current gain vs. collector current (I)

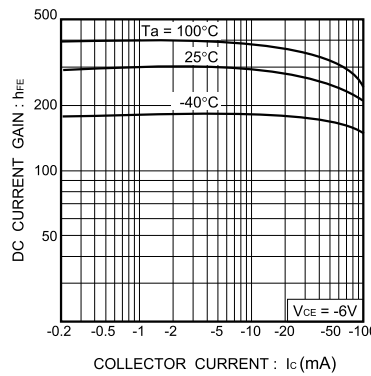


Fig.5 DC current gain vs. collector current (II)

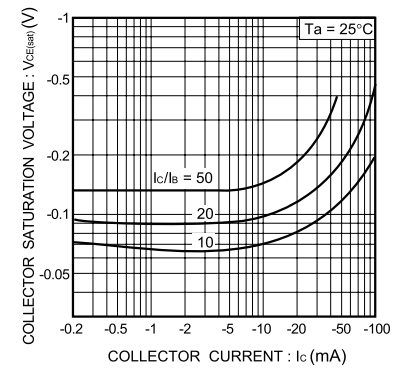


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

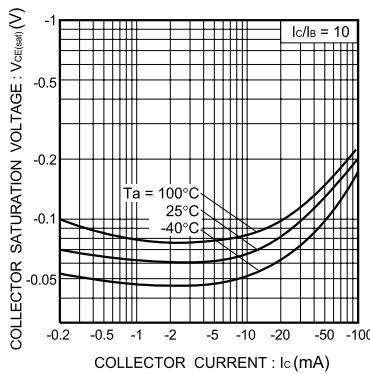


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

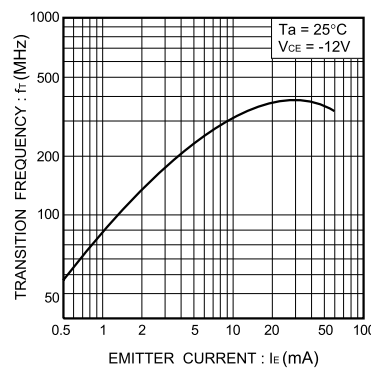


Fig.8 Gain bandwidth product vs. emitter current

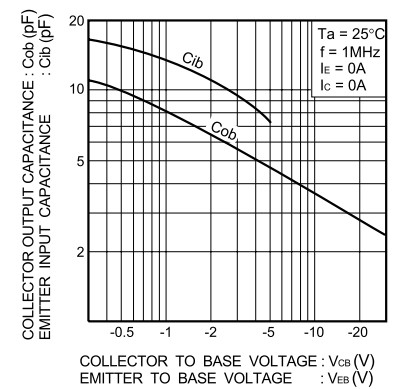


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

LUMF23NDW1T1G ;S-LUMF23NDW1T1G

Tr2

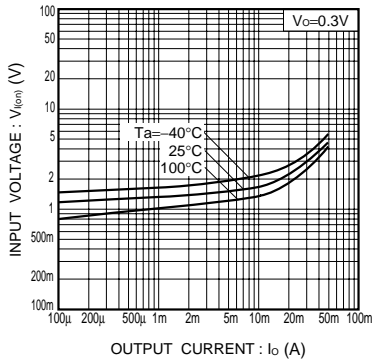


Fig.1 Input voltage vs. output current (ON characteristics)

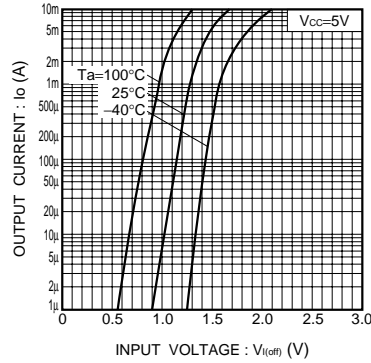


Fig.2 Output current vs. input voltage (OFF characteristics)

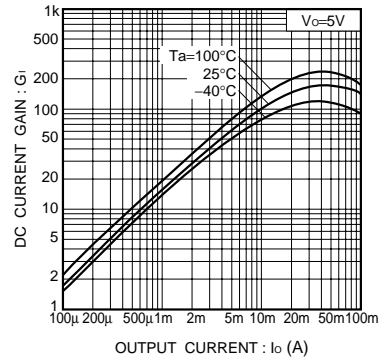


Fig.3 DC current gain vs. output current

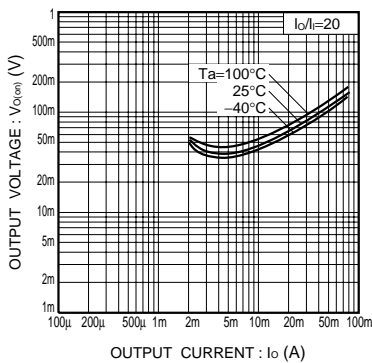


Fig.4 Output voltage vs. output current

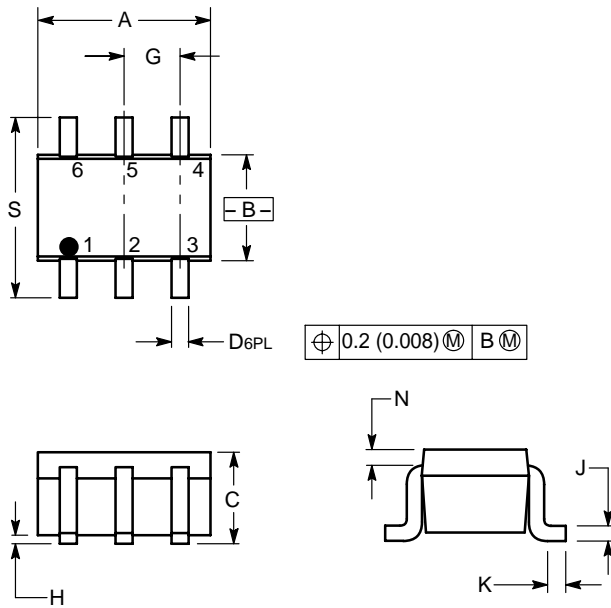
LUMF23NDW1T1G ;S-LUMF23NDW1T1G

SC-88

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

