

POWER SUPPLY MONITOR DEVICES

EML22/UML23N

●Features

- 1) Packaging Zener diode and small-signal amplifier transistor
- 2) Using outside connection able to use Power supply monitor device
- 3) When use Power supply monitor device, Temperature drift characteristics of detect voltage is about 150 ppm/°C.

●Applications

Protection of over load of power supply.

●Packaging specifications and Marking

Type	EML22	UML23N
Package	EMT6	UMT6
Marking	L22	L23
Code	T2R	TR
Basic ordering unit (pieces)	8000	3000

●Absolute maximum ratings (Ta=25°C)

Tr

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	150	mA
Power dissipation	P_D^{*1}	120	mW

Di

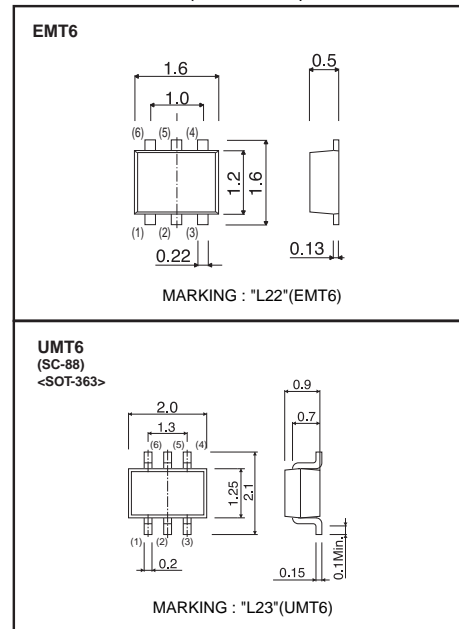
Parameter	Symbol	Limits	Unit
Power dissipation	P_D^{*1}	120	mW

Tr and Di

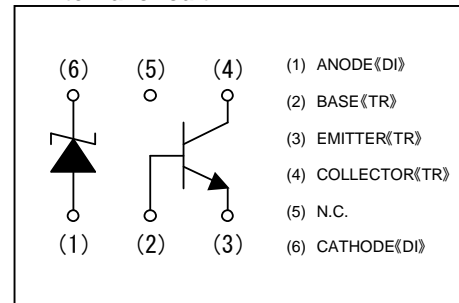
Parameter	Symbol	Limits	Unit
Power dissipation	P_D^{*1}	150	mW
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

*1 Mounted on reference land.

●Dimensions (Unit : mm)



●Internal circuit



●Electrical characteristics (Ta = 25°C)

Tr

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	50	—	—	V	$I_C=1\text{mA}$
Collector-base breakdown voltage	BV_{CBO}	60	—	—	V	$I_C=50\mu\text{A}$
Emitter-base breakdown voltage	BV_{EBO}	7	—	—	V	$I_E=50\mu\text{A}$
Collector cut-off current	I_{CBO}	—	—	100	nA	$V_{CB}=60\text{V}$
Emitter cut-off current	I_{EBO}	—	—	100	nA	$V_{EB}=7\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	400	mV	$I_C/I_B=50\text{mA}/5\text{mA}$
DC current gain	h_{FE}	120	—	390	—	$V_{CE}=6\text{V}, I_C=1\text{mA}$
Transition frequency	f_T	—	180	—	MHz	$V_{CE}=12\text{V}, I_E=-2\text{mA},$ $f=100\text{MHz}$
Output capacitance	C_{ob}	—	2	—	pF	$V_{CB}=12\text{V}, I_E=0\text{A},$ $f=1\text{MHz}$

Di

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Zener voltage	V_Z	6.58	6.80	7.00	V	$I_Z=5\text{mA}$
Reverse current	I_R	—	—	0.5	mA	$V_R=3.5\text{V}$

●Electrical characteristic curves

<Tr>

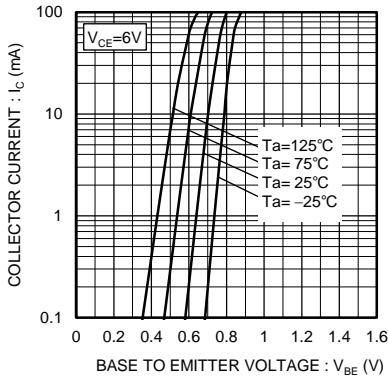


Fig. 1 GROUNDED EMITTER PROPAGATION CHARACTERISTICS

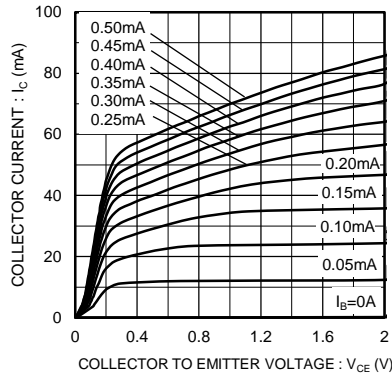


Fig. 2 GROUNDED EMITTER OUTPUT CHARACTERISTICS (I)

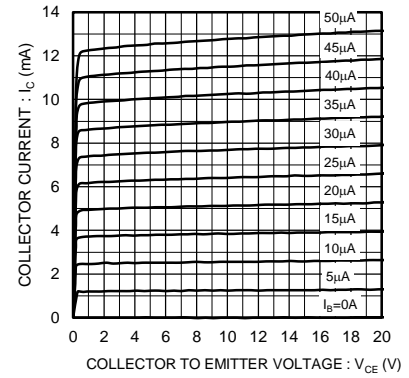


Fig. 3 GROUNDED EMITTER OUTPUT CHARACTERISTICS (II)

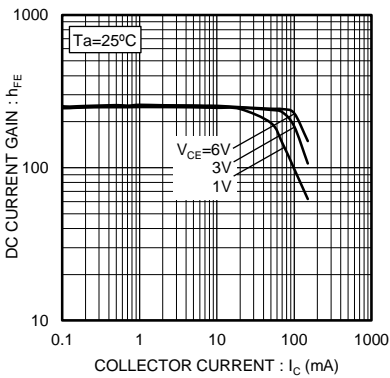


Fig.4 DC CURRENT GAIN vs. COLLECTOR CURRENT CHARACTERISTICS (I)

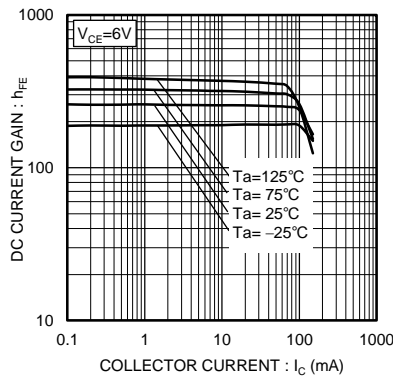


Fig. 5 DC CURRENT GAIN vs. COLLECTOR CURRENT CHARACTERISTICS (II)

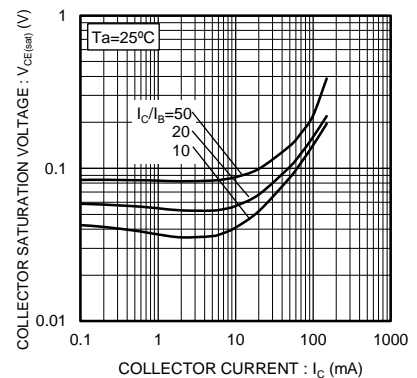


Fig. 6 COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT CHARACTERISTICS (I)

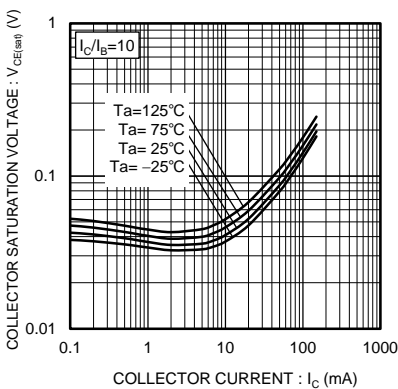


Fig. 7 COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT CHARACTERISTICS (II)

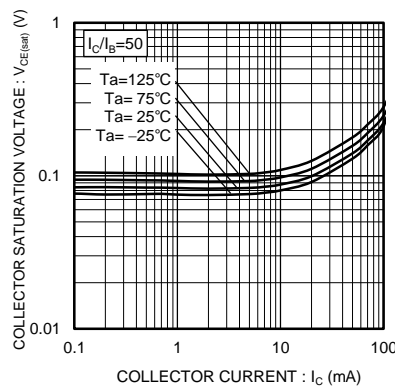


Fig. 8 COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT CHARACTERISTICS (III)

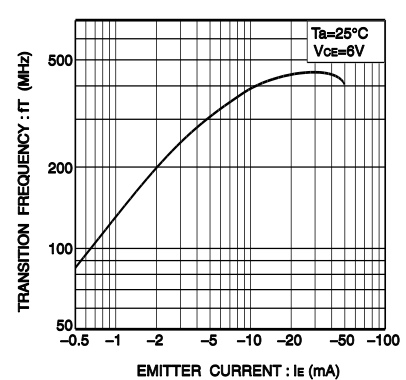


Fig.9 Gain bandwidth product vs. emitter current

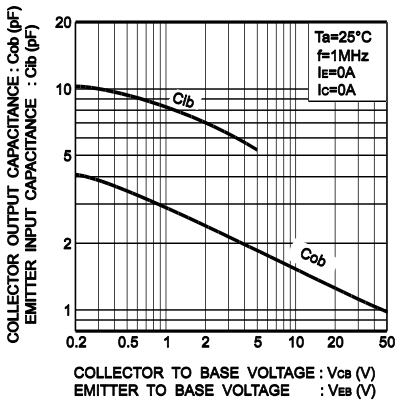


Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

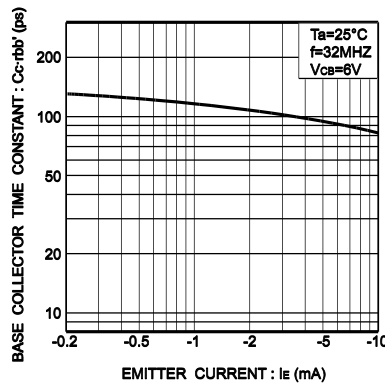


Fig.11 Base-collector time constant vs. emitter current

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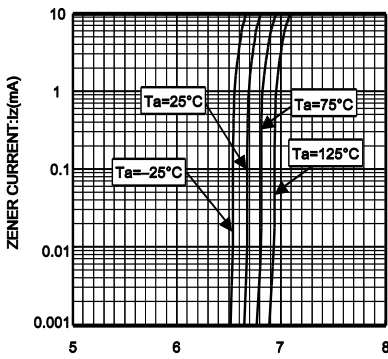


Fig.12 ZENER VOLTAGE: V_z (V)
 V_z - I_z CHARACTERISTICS

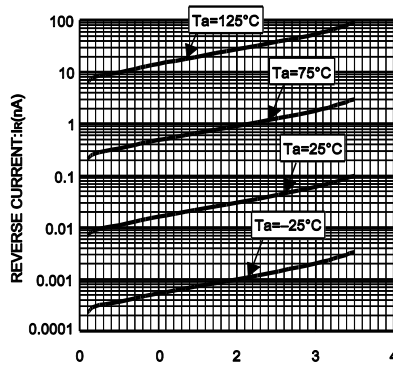


Fig.13 REVERSE VOLTAGE: V_R (V)
 V_R - I_R CHARACTERISTICS

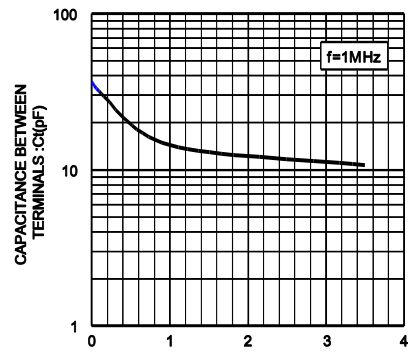


Fig.14 REVERSE VOLTAGE: V_R (V)
 V_R - C_t CHARACTERISTICS

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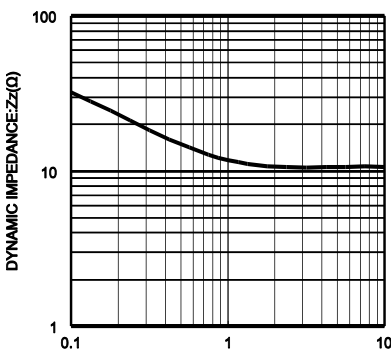


Fig.15 ZENER CURRENT: I_z (mA)
 Z_z - I_z CHARACTERISTICS

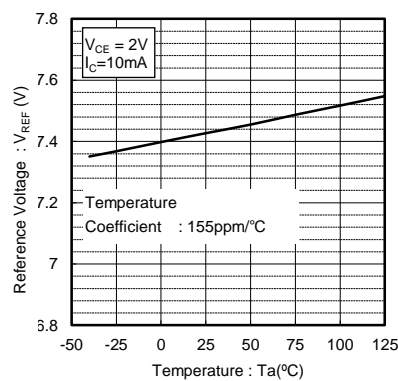


Fig.16 Reference Voltage vs Temperature Characteristics

●Measurement circuits

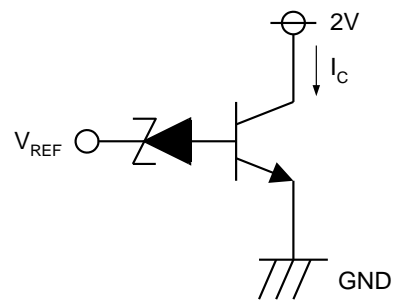


Fig 17 Reference Voltage vs Temperature Characteristics Measurement Circuit

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