General purpose transistor (isolated transistor and diode)

UML12N

2SC4617and RB521S-30 are housed independently in a UMT5 package.

●Applications

DC / DC converter
Motor driver

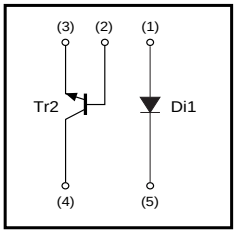
●Features

1) Tr : Low $V_{CE(sat)}$
   Di : Low V_F
2) Small package

●Structure

Silicon epitaxial planar transistor
Schottky barrier diode

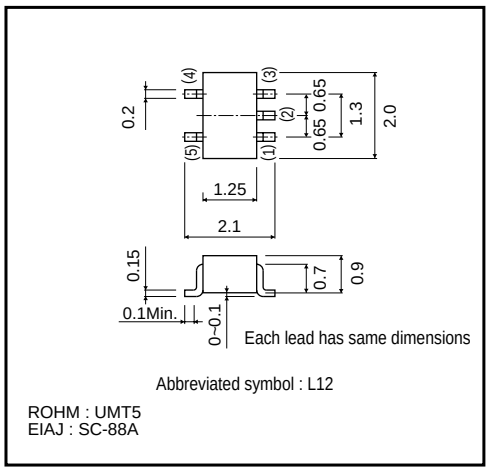
●Equivalent circuit



●Packaging specifications

Type	UML12N
Package	UMT5
Marking	L12
Code	TR
Basic ordering unit (pieces)	3000

●External dimensions (Units : mm)



Abbreviated symbol : L12

ROHM : UMT5
EIAJ : SC-88A

●**Absolute maximum ratings** (Ta=25°C)

Di1

Parameter	Symbol	Limits	Unit
Average revtified forward current	I_O	200	mA
Forward current surge peak (60Hz, 1∞)	I_{FSM}	1	A
Reverse voltage (DC)	V_R	30	V
Junction temperature	Tj	125	°C
Range of storage temperature	Tstg	–55~+125	°C

Tr2

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	120	mW *
Junction temperature	Tj	150	˚C
Storage temperature	Tstg	–55~+125	˚C

* Each terminal mount on a recommended.

●**Electrical characteristics** (Ta=25°C)

Di1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_R	–	0.40	0.50	V	I_F=200mA
Reverse current	I_R	–	4.0	30	µA	V_R=10V

Tr2

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}	7	–	–	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}=7V
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	–	–	0.4	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	–	180	–	MHz	V_{CE}=12V, I_E=–2mA, f=100MHz
Output capacitance	Cob	–	2	3.5	PF	V_{CB}=12V, I_E=0A, f=1MHz

●Electrical characteristic curves

Di1

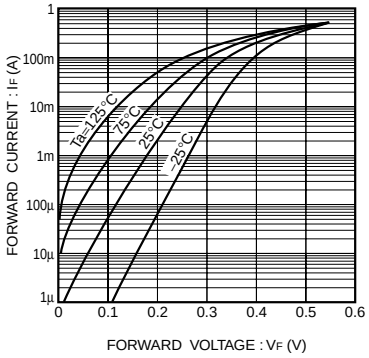


Fig.1 Forward characteristics

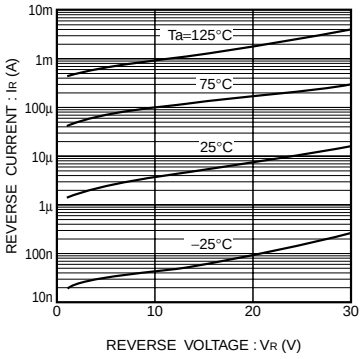


Fig.2 Reverse characteristics

Tr2

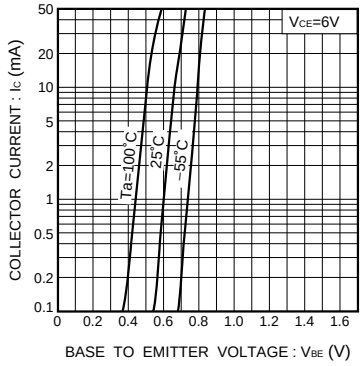


Fig.1 Grounded emitter propagation characteristics

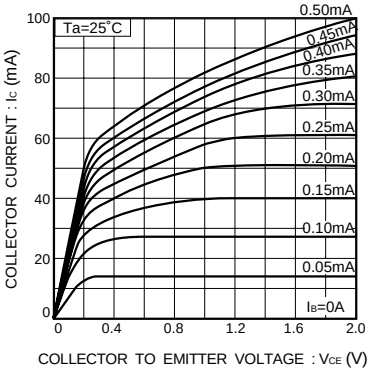


Fig.2 Grounded emitter output characteristics (I)

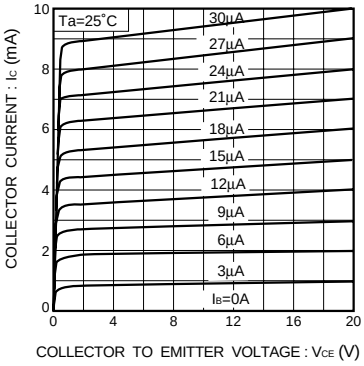


Fig.3 Grounded emitter output characteristics (II)

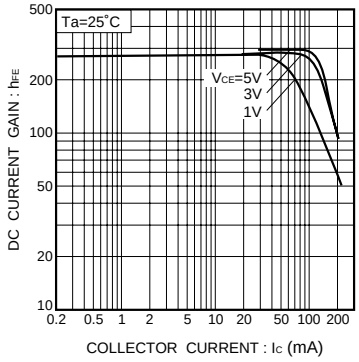


Fig.4 DC current gain vs. collector current (I)

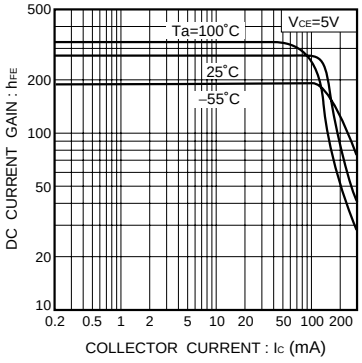


Fig.5 DC current gain vs. collector current (II)

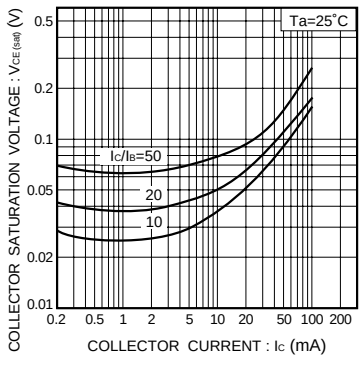


Fig.6 Collector-emitter saturation voltage vs. collector current

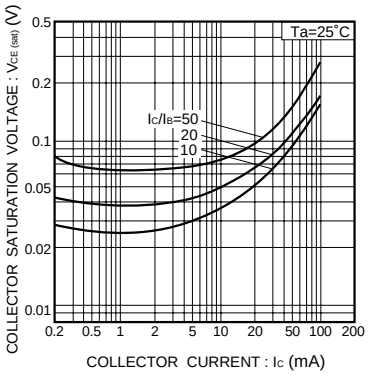


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

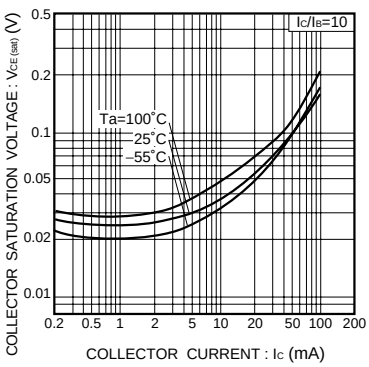


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

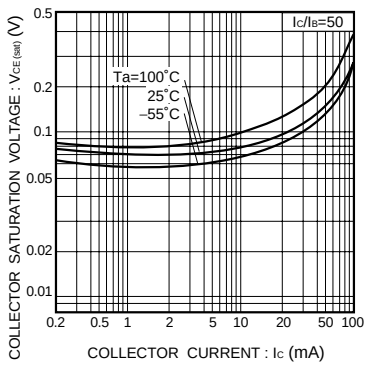


Fig.9 Collector-emitter saturation voltage vs. collector current (III)

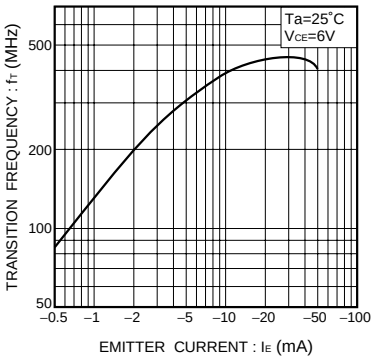


Fig.10 Gain bandwidth product vs. emitter current

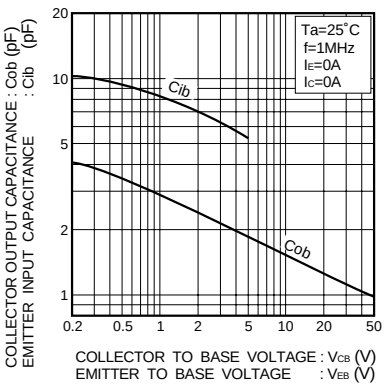


Fig.11 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

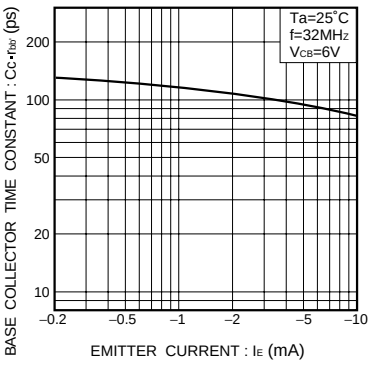


Fig.12 Base-collector time constant vs. emitter current