

General purpose transistor (isolated transistor and diode)

EML11 / UML11N

2SA1774 and a RB521S-30 are housed independently in a EMT5 or UMT5 package.

●Applications

DC / DC converter
Motor driver

●Features

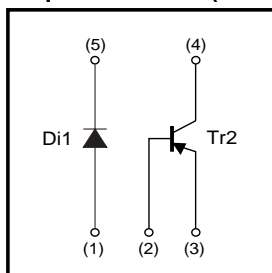
- 1) Tr2: Small Signal Transistor
Di1: Low V_F
- 2) Small package

●Structure

Silicon epitaxial planar transistor
Schottky barrier diode

The following characteristics apply to both Di1 and Tr2.

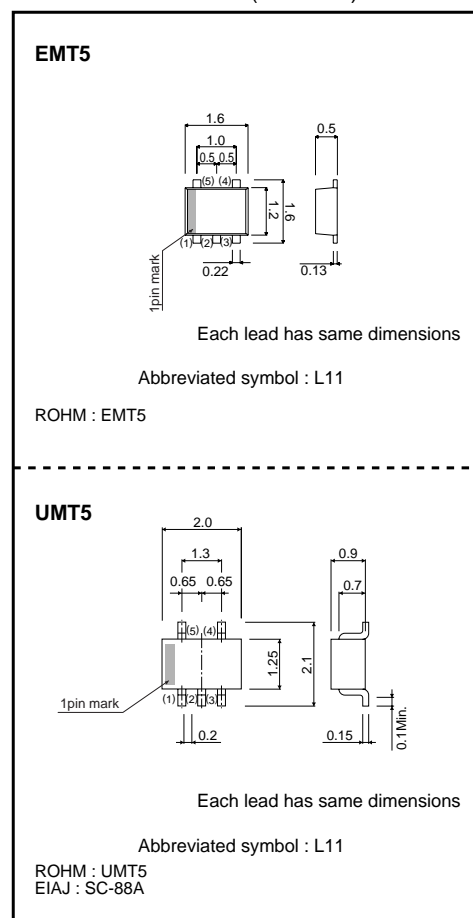
●Equivalent circuit (EML11 / UML11N)



●Packaging specifications

| Type | EML11 | UML11N |
|-----------------------------|-------|--------|
| Package | EMT5 | UMT5 |
| Marking | L11 | L11 |
| Code | T2R | TR |
| Basic ordering unit(pieces) | 8000 | 3000 |

●External dimensions (Unit : mm)



Transistors

●Absolute maximum ratings (Ta=25°C)

Di1

| Parameter | Symbol | Limits | Unit |
|---------------------------------------|------------------|--------|------|
| Average rectified 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 | T _j | 125 | °C |

Tr2

| Parameter | Symbol | Limits | Unit |
|---------------------------|------------------|--------|------|
| Collector-base voltage | V _{CB0} | -60 | V |
| Collector-emitter voltage | V _{CE0} | -50 | V |
| Emitter-base voltage | V _{EBO} | -6 | V |
| Collector current | I _c | -150 | mA |
| Power dissipation | P _D | 120 | mW * |
| Junction temperature | T _j | 150 | °C |

* Each terminal mounted on a recommended.

Di1 / DTr2

| Parameter | Symbol | Limits | Unit |
|---------------------|------------------|-------------|------|
| Power dissipation | P _d | 150 | mW * |
| Storage temperature | T _{stg} | -55 to +125 | °C |

* Each terminal mounted on a recommended.

●Electrical characteristics (Ta=25°C)

Di1

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|----------------|------|------|------|------|-----------------------|
| Forward voltage | V _F | - | 0.40 | 0.50 | V | I _F =200mA |
| Reverse current | I _R | - | 4.0 | 30 | μA | V _R =10V |

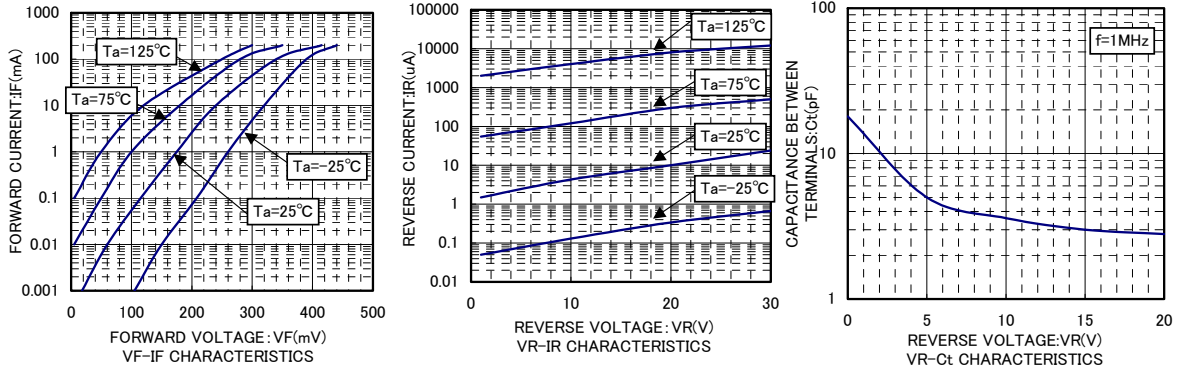
Tr2

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV _{CB0} | -60 | - | - | V | I _c =-50μA |
| Collector-emitter breakdown voltage | BV _{CE0} | -50 | - | - | V | I _c =-1mA |
| Emitter-base breakdown voltage | BV _{EBO} | -6 | - | - | V | I _E =-50μA |
| Collector cutoff current | I _{cBO} | - | - | -100 | nA | V _{CB} =-60V |
| Emitter cutoff current | I _{EBO} | - | - | -100 | nA | V _{EB} =-6V |
| Collector-emitter saturation voltage | V _{CE(sat)} | - | - | -500 | mV | 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} | - | 4.0 | 5.0 | pF | V _{CB} =-12V, I _E =0A, f=1MHz |

Transistors

●Electrical characteristic curves

Di1



Tr2

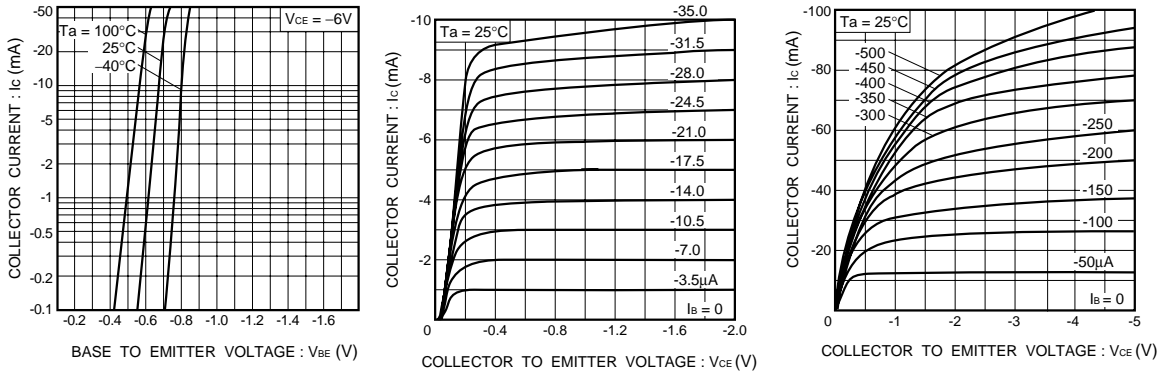


Fig.1 Grounded emitter propagation characteristics

Fig.2 Grounded emitter output characteristics (I)

Fig.3 Grounded emitter output characteristics (II)

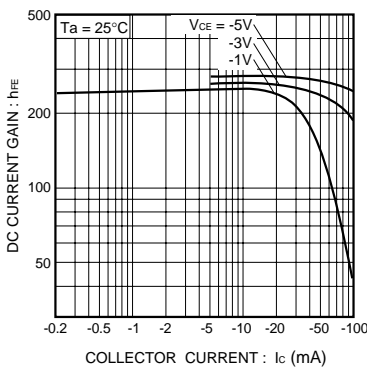


Fig.4 DC current gain vs. collector current (I)

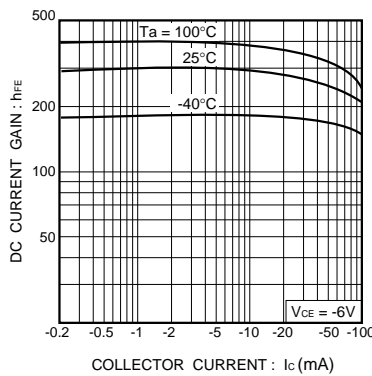


Fig.5 DC current gain vs. collector current (II)

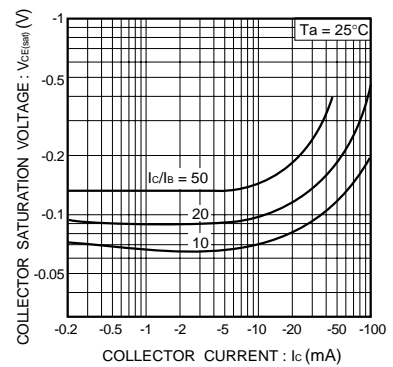


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

Transistors

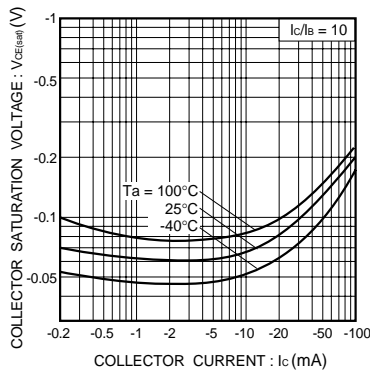


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

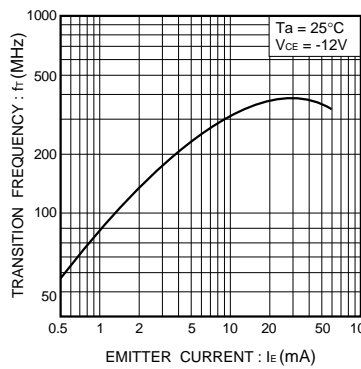


Fig.8 Gain bandwidth product vs. emitter current

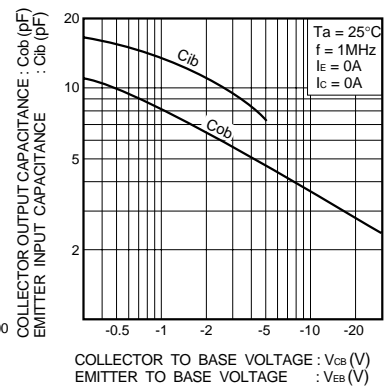


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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