## General purpose transistor (isolated transistor and diode)

## EML17

DTA144E and a RB520G-30 are housed independently in a EMT package.

## -Applications

DC / DC converter
Motor driver

## -Features

1) Tr : Degital Transistor

Di : Low $V_{F}$
2) Small package

## - Structure

Silicon epitaxial planar degital transistor Schottky barrier diode

## $\bullet$ Equivalent circuit


-Packaging specifications

| Type | EML17 |
| :---: | :---: |
| Package | EMT5 |
| Marking | L17 |
| Code | T2R |
| Basic ordering unit (pieces) | 8000 |

-External dimensions (Unit : mm)
EML17


Each lead has same dimensions

Transistors
-Absolute maximum ratings $\left(\mathrm{Ta}=25^{\circ} \mathrm{C}\right)$
Di1

| Parameter | Symbol | Limits | Unit |
| :--- | :---: | :---: | :---: |
| DC current voltage | $\mathrm{V}_{\mathrm{R}}$ | 30 | V |
| Mean rectifying current | Io | 100 | mA |
| Forward peak surge current $(60 \mathrm{~Hz} \cdot 1 \mathrm{cyc})$. | IFSM | 500 | mA |
| Junction temperature | Tj | 125 | ${ }^{\circ} \mathrm{C}$ |
| Storage temperature | Tstg | -40 to +125 | ${ }^{\circ} \mathrm{C}$ |

* $60 \mathrm{~Hz}, 1$ ®

Tr2

| Parameter | Symbol | Limits | Unit |
| :--- | :---: | :---: | :---: |
| Supply voltage | $\mathrm{V}_{\mathrm{CC}}$ | -50 | V |
| Input voltage | $\mathrm{VIN}_{2}$ | $-40 \mathrm{to}+10$ | V |
| Output current | IO | -30 | mA |
|  | $\mathrm{IC}(\mathrm{MAX})$ | -100 |  |
| Power dissipation | Pd | 120 | mW |
| Junction temperature | Tj | 150 | ${ }^{\circ} \mathrm{C}$ |

Di1, Tr2

| Parameter | Symbol | Limits | Unit |
| :--- | :---: | :---: | :---: |
| Power dissipation | Pd | 150 | $\mathrm{~mW} *$ |
| Range of storage temperature | Tstg | -55 to +125 | ${ }^{\circ} \mathrm{C}$ |

- Electrical characteristics $\left(\mathrm{Ta}=25^{\circ} \mathrm{C}\right)$

Di1

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Forward voltage | $\mathrm{V}_{\mathrm{F}}$ | - | - | 0.45 | V | $\mathrm{I}_{\mathrm{F}=10 \mathrm{~mA}}$ |
| Reverse current | $\mathrm{IR}_{\mathrm{R}}$ | - | - | 0.5 | $\mu \mathrm{~A}$ | $\mathrm{~V}_{\mathrm{R}=10 \mathrm{~V}}$ |

* Please pay attention to static electricity when handling.

Tr2

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Input voltage | $\mathrm{V}_{\text {I(off) }}$ | - | - | -0.5 | V | $\mathrm{Ic}=-5 \mathrm{~V}, \mathrm{Io}=-100 \mu \mathrm{~A}$ |
|  | $\mathrm{V}_{\text {I }}$ (on) | -3.0 | - | - |  | V o $=-0.3 \mathrm{~V}$, lo $=-2 \mathrm{~mA}$ |
| Output voltage | Vo(on) | - | -0.1 | -0.3 | V | $\mathrm{lo} / \mathrm{l}=-10 \mathrm{~mA} /-0.5 \mathrm{~mA}$ |
| Input current | 1 | - | - | -0.18 | mA | $\mathrm{V}=-5 \mathrm{~V}$ |
| Output current | l (off) | - | - | -0.5 | $\mu \mathrm{A}$ | $\mathrm{Vcc}=-50 \mathrm{~V}, \mathrm{~V} 1=0 \mathrm{~V}$ |
| DC current gain | $\mathrm{G}_{1}$ | 68 | - | - | - | V o $=-5 \mathrm{~V}$, $\mathrm{lo}=-5 \mathrm{~mA}$ |
| Input resistance | $\mathrm{R}_{1}$ | 32.9 | 47 | 61.1 | k $\Omega$ | - |
| Resistance ratio | $\mathrm{R}_{2} / \mathrm{R}_{1}$ | 0.8 | 1 | 1.2 | - | - |
| Transition frequency | $\mathrm{f}^{\text {T }}$ | - | 250 | - | MHz | $\mathrm{V} C \mathrm{E}=-10 \mathrm{~V}, \mathrm{IE}=5 \mathrm{~mA}, \mathrm{f}=100 \mathrm{MHz}$ |

* Transition frequency of the device


## - Electrical characteristic curves

Di1


Fig. 1 Forward characteristics
Tr2

output current : lo (A)
Fig. 4 Input voltage vs. output current (ON characteristics)


OUTPUT CURRENT : lo (A)
Fig. 7 Output voltage vs. output current


Fig. 2 Reverse characteristics

infut Voltage : $\mathrm{V}_{\text {l(af) }}(\mathrm{V})$
Fig. 5 Output current vs. Input voltage (OFF characteristics)


Fig. 3 Capacitance between terminals characteristics


Fig. 6 DC current gain vs. output current

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