Vincotech

# 30-EP12SAA001MS-PT59F77T

target datasheet

for virtual products created by Vincotech Product Creator, only for evaluation purposes, no commitment for product development!

**_flow_DUAL E3BP** **1200 V / 1.4 mR**

## Topology features

- Common emitter point Half Bridge
- Temperature sensor

## Component features

- High Blocking Voltage with low drain source on state resistance
- High speed SiC-MOSFET technology
- Resistant to Latch-up

## Housing features

- Base isolation: $Al_2O_3$
- Cu baseplate
- Convex shaped baseplate for superior thermal contact
- CTI600 housing material
- Baseplate with rough surface
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

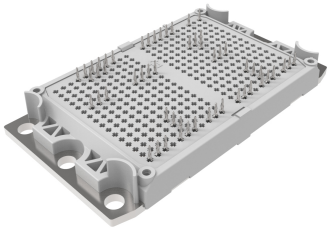
## Target applications

- Solid-State Circuit Breakers
- Embedded Drives
- General Purpose Drives
- Industrial Drives

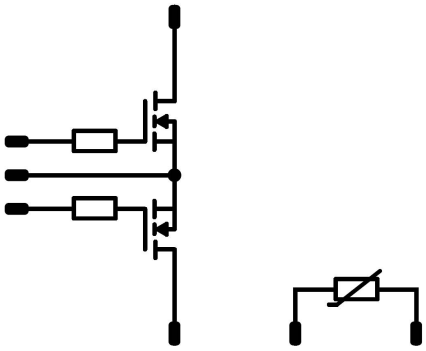
## Types

- 30-EP12SAA001MS-PT59F77T

## _flow_ E3BP 12 mm housing



## Schematic



# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | Value | Unit |
|---|---|---|---|---|
| **AC Switch** | | | | |
| Drain-source voltage | $V_{DSS}$ | | 1200 | V |
| Drain current | $I_D$ | $T_j = T_{jmax}$ | 852 | A |
| Peak drain current | $I_{DM}$ | $t_p$ limited by $T_{jmax}$ | 3408 | A |
| Total power dissipation | $P_{tot}$ | $T_j = T_{jmax}$ $T_s$ = 80 °C | 773 | W |
| Gate-source voltage | $V_{GSS}$ | static | -5 / 18 | V |
| | | dynamic | -10 / 22 | V |
| Maximum Junction Temperature | $T_{jmax}$ | | 175 | °C |

# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | Value | Unit |
|---|---|---|---|---|
| **Module Properties** | | | | |
| **Thermal Properties** | | | | |
| Storage temperature | $T_{stg}$ | | -40…+125 | °C |
| Operation temperature under switching condition | $T_{jop}$ | | -40…+($T_{jmax}$ - 25) | °C |
| **Isolation Properties** | | | | |
| Isolation voltage | $V_{isol}$ | DC Test Voltage $t_p$ = 2 s | 6000 | V |
| Creepage distance | | | TBD | mm |
| Clearance | | | TBD | mm |
| Comparative Tracking Index | CTI | | ≥ 600 | |

# Characteristic Values

| Parameter | Symbol | Conditions | | | | | Values | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $V_{GE}$ [V]<br>$V_{GS}$ [V] | $V_{CE}$ [V]<br>$V_{DS}$ [V]<br>$V_F$ [V] | $I_C$ [A]<br>$I_D$ [A]<br>$I_F$ [A] | $T_j$ [°C] | Min | Typ | Max | |
| **AC Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Drain-source on-state resistance | $r_{DS(on)}$ | | 18 | | 852 | 25 | | 1,42 | 2,08 | mΩ |
| Diode forward voltage | $V_{SD}$ | | 0 | | 426 | 25 | | 4,1 | | V |
| Gate-source threshold voltage | $V_{GS(th)}$ | | 0 | | 0,09 | 25 | 1,7 | 2,25 | 2,75 | V |
| Gate to Source Leakage Current | $I_{GSS}$ | | 22 | 0 | | 25 | | | 1200 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | | 0 | 1200 | 0 | 25 | | | 120 | µA |
| Internal gate resistance | $r_g$ | | | | | | | 0,25 | | Ω |
| Gate charge | $Q_g$ | | | 0 | 852 | 25 | | 2256 | | nC |
| Short-circuit input capacitance | $C_{iss}$ | $f$ = 500 kHz | 0 | 800 | 0 | 25 | | 56160 | | pF |
| Short-circuit output capacitance | $C_{oss}$ | | | | | | | 2820 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | | | | | 96 | | |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste}$ = 5,2 W/mK (PTM) | | | | | | 0,12 | | K/W |
| **Thermistor** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Rated resistance | $R$ | | | | | 25 | | 22 | | kΩ |
| Deviation of R100 | $\Delta_{R/R}$ | $R_{100}$ = 1484 Ω | | | | 100 | -5 | | 5 | % |
| Power dissipation | $P$ | | | | | | | 130 | | mW |
| Power dissipation constant | | | | | | 25 | | 1,5 | | mW/K |
| B-value | $B_{(25/50)}$ | | | | | 25 | | 3962 | | K |
| B-value | $B_{(25/100)}$ | | | | | 25 | | 4000 | | K |
| Vincotech Thermistor Reference | | | | | | | | | I | |

## Ordering Code

| Version | Ordering Code |
|---|---|
| Without thermal paste | 10-EP12SAA001MS-PT59F77T |
| With thermal paste (5,2 W/mK, PTM6000HV) | 10-EP12SAA001MS-PT59F77T-/7/ |

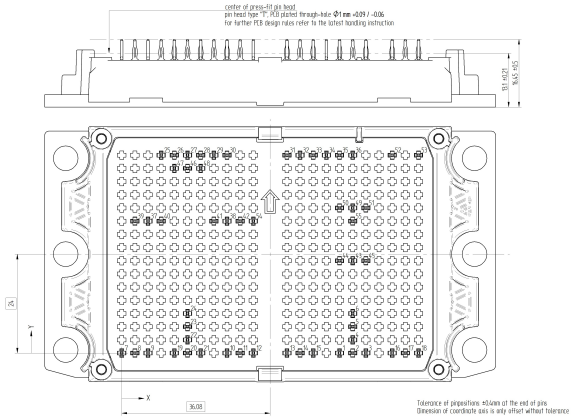
## Marking


| | Name | | Date code | UL & VIN | Lot | Serial |
|---|---|---|---|---|---|---|
| **Text** | NN-NNNNNNNNNNNNNN-TTTTTTVV | | WWYY | UL VIN | LLLLL | SSSS |
| **Datamatrix** | **Type&Ver** | **Lot number** | **Serial** | **Date code** | | |
| | TTTTTTVV | LLLLL | SSSS | WWYY | | |

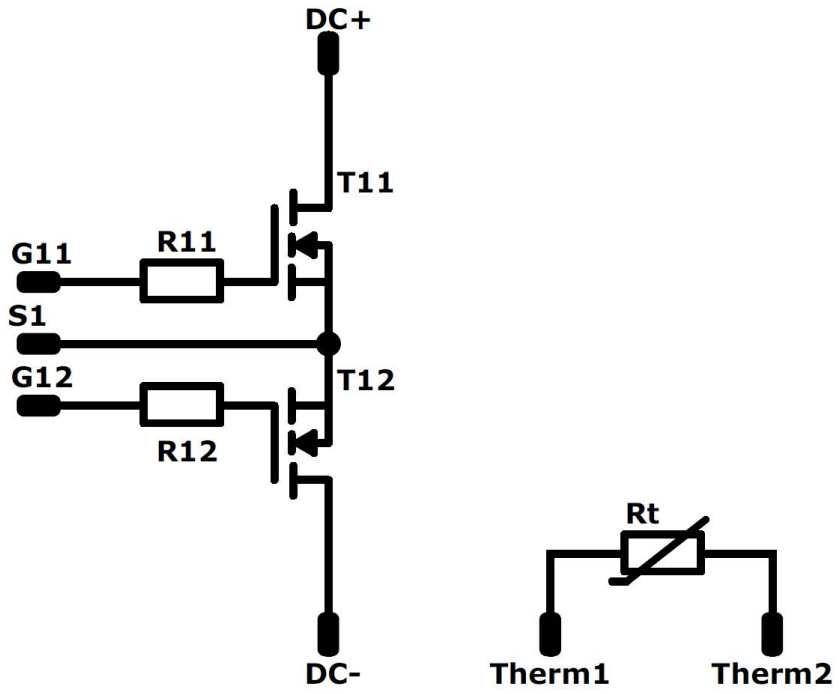
## Outline

Pin table [mm]

| Pin | X | Y | Function |
|---|---|---|---|
| 1 | TBD | TBD | TBD |



## Pinout




## Identification

| ID | Component | Voltage | Current | Function | Comment |
|---|---|---|---|---|---|
| T11, T12 | MOSFET | 1200 V | 426 A | AC Switch | |
| R11, R12 | Resistor | | | Resistor (Gate) | |
| Rt | Thermistor | | | Thermistor | |

| Packaging instruction | | | | |
|---|---|---|---|---|
| Standard packaging quantity (SPQ) 24 | >SPQ | Standard | <SPQ | Sample |

| Handling instruction |
|---|
| Handling instructions for *flow* E3BP packages see vincotech.com website. |

| Package data |
|---|
| Packaging data for *flow* E3BP packages see vincotech.com website. |

| Vincotech thermistor reference |
|---|
| See Vincotech thermistor reference table at vincotech.com website. |

| UL recognition and file number |
|---|
| This device is UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,op}$=175°C and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website. |

| Document No.: | Date: | Modification: | Pages |
|---|---|---|---|
| 30-EP12SAA001MS-PT59F77T-T0-14 | 30 Sep. 2025 | Preliminary Release | |

| Product status definition | | |
|---|---|---|
| **Datasheet Status** | **Product Status** | **Definition** |
| Target | Formative or In Design | This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff. |