Vincotech

# 10-EY122PA006MR-LU39F48T
target datasheet

***flow*DUAL E2 SiC** **1200 V / 6 mΩ**

## Topology features

- Temperature sensor
- Half Bridge

## Component features

- Fast intrinsic diode with low reverse recovery
- High blocking voltage with low on-resistance
- High speed switching with low capacitance

## Housing features

- Base isolation: $Al_2O_3$
- Convex shaped substrate for superior thermal contact
- Compact housing
- CTI600 housing material
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

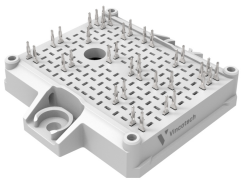
## Target applications

- Charging Stations
- Energy Storage Systems
- General
- Industrial Drives
- Power Supply
- Servo Drives
- Solar Inverters
- UPS

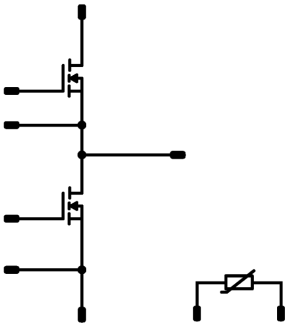
## Types

- 10-EY122PA006MR-LU39F48T

## *flow* E2 12 mm housing



## Schematic



# Maximum Ratings

$T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | Value | Unit |
|---|---|---|---|---|
| **Inverter Switch** | | | | |
| Drain-source voltage | $V_{DSS}$ | | 1200 | V |
| Drain current (DC current) | $I_D$ | $T_j$ = $T_{jmax}$ $T_s$ = 80 °C | 308 | A |
| Peak drain current | $I_{DM}$ | $t_p$ limited by $T_{jmax}$ | 504 | A |
| Total power dissipation | $P_{tot}$ | $T_j$ = $T_{jmax}$ $T_s$ = 80 °C | 207 | W |
| Gate-source voltage | $V_{GSS}$ | | -4 / 21 | V |
| | | dynamic | -4 / 23 | |
| Maximum Junction Temperature | $T_{jmax}$ | | 175 | °C |
| **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 | 6800 | V |
| Creepage distance | | | >12,7 | mm |
| Clearance | | | 9,34 | 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 | |
| **Inverter Switch** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Drain-source on-state resistance | $r_{DS(on)}$ | | 18 | | 126 | 25<br>150 | | 6<br>12 | 7,5 | mΩ |
| Gate-source threshold voltage | $V_{GS(th)}$ | | | | 0,0666 | 25 | 2,8 | 3,5 | 4,8 | V |
| Gate to Source Leakage Current | $I_{GSS}$ | | 21 | 0 | | 25 | | | 600 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | | 0 | 1200 | | 25 | | 6 | 480 | µA |
| Internal gate resistance | $r_g$ | | | | | | | 0,167 | | Ω |
| Gate charge | $Q_g$ | | 0/18 | 800 | 126 | 25 | | 546 | | nC |
| Gate to source charge | $Q_{GS}$ | | | | | | | 120 | | |
| Gate to drain charge | $Q_{GD}$ | | | | | | | 144 | | |
| Short-circuit input capacitance | $C_{iss}$ | $f$ = 1 Mhz | 0 | 800 | 0 | 25 | | 14010 | | pF |
| Short-circuit output capacitance | $C_{oss}$ | | | | | | | 420 | | |
| Reverse transfer capacitance | $C_{rss}$ | | | | | | | 30 | | |
| Diode forward voltage | $V_{SD}$ | | 0 | | 126 | 25 | | 3,3 | | V |
| **Thermal** | | | | | | | | | | |
| Thermal resistance junction to sink | $R_{th(j-s)}$ | $\lambda_{paste}$ = 3,4 W/mK (PSX) | | | | | | 0,46 | | K/W |

# 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 | |
| **Thermistor** | | | | | | | | | | |
| **Static** | | | | | | | | | | |
| Rated resistance | $R$ | | | | | 25 | | 5 | | kΩ |
| Deviation of R100 | $\Delta_{R/R}$ | $R_{100}$ = 499 Ω | | | | 100 | 3,2 | | 3,3 | % |
| Power dissipation | $P$ | | | | | 25 | | 130 | | mW |
| Power dissipation constant | $d$ | | | | | 25 | | 1,3 | | mW/K |
| B-value | $B_{(25/50)}$ | Tol. ±1 % | | | | | | 3380 | | K |
| Vincotech Thermistor Reference | | | | | | | | | V | |

## Ordering Code

| Version | Ordering Code |
|---|---|
| Without thermal paste | 10-EY122PA006MR-LU39F48T |
| With thermal paste (5,2 W/mK, PTM6000HV) | 10-EY122PA006MR-LU39F48T-/7/ |

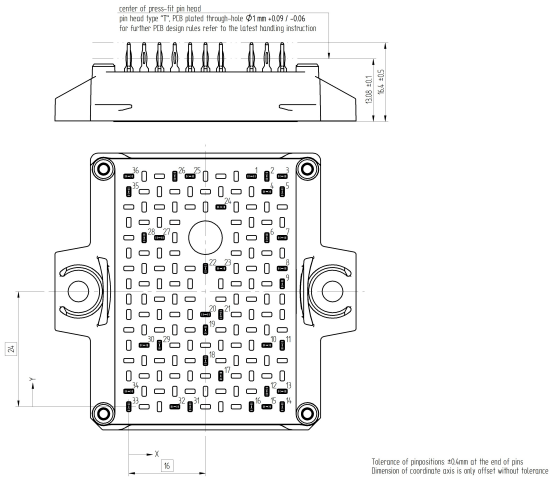
## Marking


| | 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 | | |

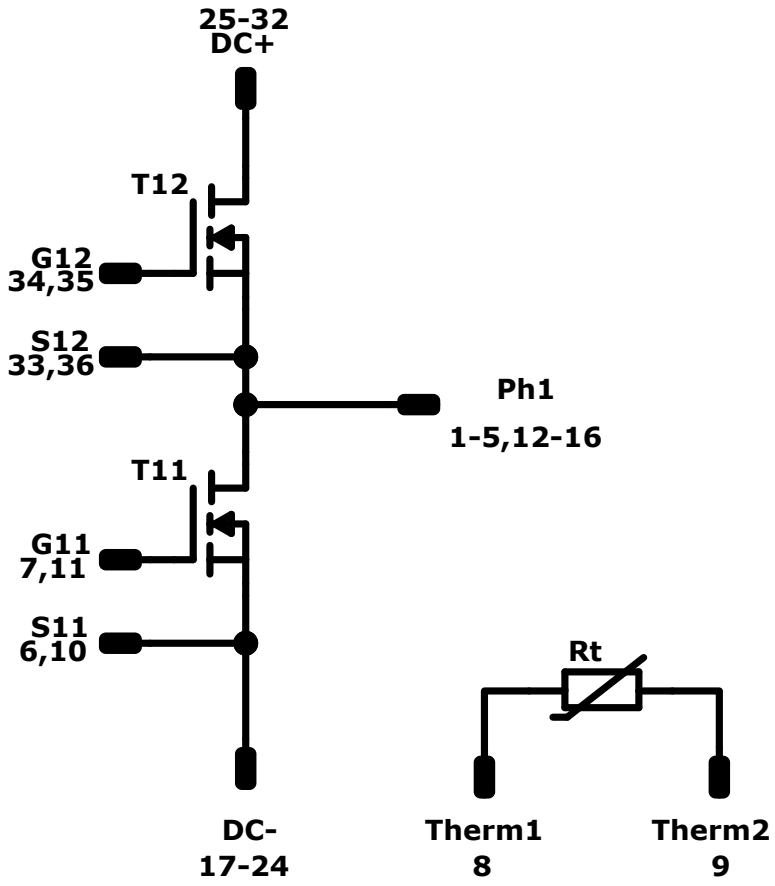
## Outline

Pin table [mm]

| Pin | X | Y | Function |
|---|---|---|---|
| 1 | 25,6 | 48 | Ph1 |
| 2 | 28,8 | 48 | Ph1 |
| 3 | 32 | 48 | Ph1 |
| 4 | 28,8 | 44,8 | Ph1 |
| 5 | 32 | 44,8 | Ph1 |
| 6 | 28,8 | 35,2 | S11 |
| 7 | 32 | 35,2 | G11 |
| 8 | 32 | 28,8 | Therm1 |
| 9 | 32 | 25,6 | Therm2 |
| 10 | 28,8 | 12,8 | S11 |
| 11 | 32 | 12,8 | G11 |
| 12 | 28,8 | 3,2 | Ph1 |
| 13 | 32 | 3,2 | Ph1 |
| 14 | 32 | 0 | Ph1 |
| 15 | 28,8 | 0 | Ph1 |
| 16 | 25,6 | 0 | Ph1 |
| 17 | 19,2 | 6,4 | DC- |
| 18 | 16 | 9,6 | DC- |
| 19 | 16 | 16 | DC- |
| 20 | 16 | 19,2 | DC- |
| 21 | 19,2 | 19,2 | DC- |
| 22 | 16 | 28,8 | DC- |
| 23 | 19,2 | 28,8 | DC- |
| 24 | 19,2 | 41,6 | DC- |
| 25 | 12,8 | 48 | DC+ |
| 26 | 9,6 | 48 | DC+ |
| 27 | 6,4 | 35,2 | DC+ |
| 28 | 3,2 | 35,2 | DC+ |
| 29 | 6,4 | 12,8 | DC+ |
| 30 | 3,2 | 12,8 | DC+ |
| 31 | 12,8 | 0 | DC+ |
| 32 | 9,6 | 0 | DC+ |
| 33 | 0 | 0 | S12 |
| 34 | 0 | 3,2 | G12 |
| 35 | 0 | 44,8 | G12 |
| 36 | 0 | 48 | S12 |



## Pinout




## Identification

| ID | Component | Voltage | Current | Function | Comment |
|---|---|---|---|---|---|
| T11, T12 | MOSFET | 1200 V | 6 mΩ | Inverter Switch | |
| Rt | Thermistor | | | Thermistor | |

| Packaging instruction | | | | |
|---|---|---|---|---|
| Standard packaging quantity (SPQ) 100 | >SPQ | Standard | <SPQ | Sample |

| Handling instruction |
|---|
| Handling instructions for *flow* E2 packages see vincotech.com website. |

| Package data |
|---|
| Package data for *flow* E2 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 4000VAC/1min isolation voltage. For more information see vincotech.com website. |

| Document No.: | Date: | Modification: | Pages |
|---|---|---|---|
| 10-EY122PA006MR-LU39F48T-T1-14 | 6 Apr. 2025 | Initial 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. |