Compact, Single-Sided High Heat Dissipation Molded Power Modules for Traction Inverter Drive

TRCDRIVE pack™

Achieves ultra-high current density
(compact + Capable of high current)

- Low inductance and switching loss
- Equipped with Low ON resistance 4th Gen SiC MOSFETs

Compact easy-to-mount
single-sided high heat dissipation molded package

Adopts a top-side press fit pin structure

A type (Small) package
22cm² size

A type (Large) package
31cm² size

Advantages of single-sided high heat dissipation package with top-side press fit pins

1. Connects to the gate drive board via the shortest route
2. Top-side press fit pins facilitate mounting
3. Contributes to smaller inverter size
4. High heat dissipation design provides the same performance as double-sided heat dissipation modules
TRCDRIVE pack™ is a compact, single-sided heat dissipation high current density molded module developed for traction inverter drives using ROHM’s proprietary module technology.

**TRCDRIVE pack™ Features**

**Low inductance enables high current density**

TRCDRIVE pack™ reduces switching losses by optimizing the internal layout to achieve an extremely small inductance of 5.7nH. Incorporating low ON resistance 4th Generation SiC MOSFETs results in an industry-leading current density of 19.1Arms/cm² (BST780D12P4A163), with an output current greater than 600Arms for both 750V rated (e.g. BST740D08P4A154) and 1200V rated (e.g. BST780D12P4A163) models.

**Compact single-sided heat dissipation molded package**

TRCDRIVE pack™ delivers equivalent heat dissipation performance to that of competitor’s products in a smaller single-sided heat dissipation design through a proprietary molded module structure. The 12-model lineup features top-side press fit pins in different package sizes (small/large) and mounting patterns (TIM : heat dissipation sheet, Ag sinter) to support quick adoption in a wider range of applications.

**Two evaluation kits enable immediate evaluation**

ROHM offers two types of evaluation kits (EVKs) for double-pulse and 3-Phase Full Bridge. We support customer evaluations with a wide range of solutions, including simulations and thermal designs. For details, please contact a sales representative.

### TRCDRIVE pack™ Evaluation kits (EVKs) with 4th Gen SiC MOSFETs

**EVK for Double-pulse Test**

- **Features**
  - Pre-connected screw-fastened external terminals eliminates the need for additional terminal welding
  - No dedicated capacitors are required, enabling evaluation in standard various environments

- **Specifications**
  - Gate Driver Board Supply: 24V Typ
  - Switching Frequency: up to 20kHz
  - Working Voltage: Depends on the withstand voltage of the capacitor/device

**EVK for 3-Phase Full Bridge**

- **Features**
  - Pre-welded screw-fastened external terminals eliminates the need for additional terminal welding
  - Dedicated pre-welded capacitors (low Ls)
  - Built-in cooling system

- **Specifications**
  - Gate Driver Board Supply: 24V Typ
  - Switching Frequency: up to 20kHz
  - Working Voltage: up to 900V

### TRCDRIVE pack™ Lineup

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Absolute Maximum Ratings (Tj=25°C)</th>
<th>Tj [°C]</th>
<th>Heat Sink Assembly</th>
<th>Module Type</th>
<th>Built-in MOSFET</th>
<th>Topology</th>
<th>A20 204 Qualified</th>
</tr>
</thead>
<tbody>
<tr>
<td>BST500D08P4A104</td>
<td>750</td>
<td>2.0</td>
<td>506</td>
<td>417</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Small</td>
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<td>BST500D08P4A114</td>
<td>750</td>
<td>2.8</td>
<td>394</td>
<td>326</td>
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<tr>
<td>BST400D12P4A101</td>
<td>1,200</td>
<td>1.4</td>
<td>738</td>
<td>659</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Small</td>
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<td>BST400D12P4A111</td>
<td>1,200</td>
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<tr>
<td>BST740D08P4A154</td>
<td>750</td>
<td>1.0</td>
<td>1,039</td>
<td>736</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Small</td>
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<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Small</td>
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<tr>
<td>BST580D12P4A151</td>
<td>750</td>
<td>1.9</td>
<td>575</td>
<td>475</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Large</td>
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<tr>
<td>BST580D12P4A153</td>
<td>1,200</td>
<td>1.9</td>
<td>575</td>
<td>475</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Large</td>
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<tr>
<td>BST1040D08P4A156</td>
<td>750</td>
<td>1.9</td>
<td>575</td>
<td>475</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Large</td>
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<tr>
<td>BST1040D08P4A166</td>
<td>1,200</td>
<td>1.9</td>
<td>575</td>
<td>475</td>
<td>TIM: heat dissipation sheet</td>
<td>Ag Sinter</td>
<td>Large</td>
</tr>
</tbody>
</table>

1. Tj=-65°C, Vgs=18V
2. Tf=65°C, Vdc=800V/500V, fsw=10kHz, Modulation=0.9, Power factor=0.9
3. Under Development

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