

Fast IGBT Chopper

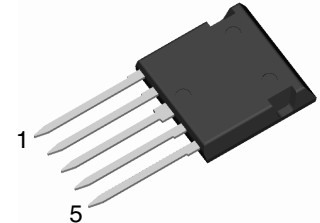
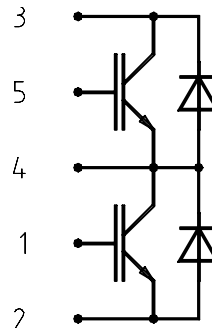
in ISOPLUS i4-PAC™

FII 30-12D

$$I_{C25} = 30 \text{ A}$$

$$V_{CES} = 1200 \text{ V}$$

$$V_{CE(sat) \text{ typ.}} = 2.3 \text{ V}$$



IGBT

| Symbol | Conditions | Maximum Ratings | |
|-----------------------|--|-----------------|---------------|
| V_{CES} | $T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$ | 1200 | V |
| V_{GES} | | ± 20 | V |
| I_{C25} | $T_C = 25^{\circ}\text{C}$ | 30 | A |
| I_{C90} | $T_C = 90^{\circ}\text{C}$ | 18 | A |
| I_{CM} V_{CEK} | $V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$ | 35 | A |
| | | V_{CES} | |
| t_{SC} (SCSOA) | $V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive | 10 | μs |
| P_{tot} | $T_C = 25^{\circ}\text{C}$ | 125 | W |

Features

- NPT IGBT
 - low saturation voltage
 - no latch up
 - positive temperature coefficient for easy paralleling
- HiPerFRED™ diode
 - fast reverse recovery
 - low operating forward voltage
 - low leakage current
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability
 - industry standard outline

| Symbol | Conditions | Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified) | | |
|--------|------------|--|------|------|
| | | min. | typ. | max. |

| | | | | |
|--|--|------------|--|--------------|
| $V_{CE(sat)}$ | $I_C = 20 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | 2.3 2.6 | | V V |
| $V_{GE(th)}$ | $I_C = 0.6 \text{ mA}; V_{GE} = V_{CE}$ | 4.5 | | 6.5 V |
| I_{CES} | $V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | 0.9 | | 0.9 mA mA |
| I_{GES} | $V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$ | | | 200 nA |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off} | Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 20 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega$ | 100 | | ns |
| | | 75 | | ns |
| | | 500 | | ns |
| | | 70 | | ns |
| | | 3.0 | | mJ |
| | | 2.4 | | mJ |
| C_{ies} | $V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$ | 1000 | | pF |
| Q_{Gon} | $V_{CE} = 600 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 18 \text{ A}$ | 70 | | nC |
| R_{thJC} | | | | 1.0 K/W |

Applications

- single phaseleg
 - buck-boost chopper
- H bridge
 - power supplies
 - induction heating
 - four quadrant DC drives
 - controlled rectifier
- three phase bridge
 - AC drives
 - controlled rectifier

Diodes

| Symbol | Conditions | Maximum Ratings | |
|-----------|--|-----------------|---|
| V_{RRM} | $T_{VJ} = 25^{\circ}\text{C}$ to 150°C | 1200 | V |
| I_{F25} | $T_C = 25^{\circ}\text{C}$ | 25 | A |
| I_{F90} | $T_C = 90^{\circ}\text{C}$ | 15 | A |

| Symbol | Conditions | Characteristic Values | | |
|----------------------|---|-----------------------|------|---------|
| | | min. | typ. | max. |
| V_F | $I_F = 20\text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$ | 2.5 1.9 | 2.9 | V V |
| I_{RM} t_{rr} | $I_F = 15\text{ A}; di_F/dt = -400\text{ A}/\mu\text{s}; T_{VJ} = 125^{\circ}\text{C}$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V}$ | 16 130 | | A ns |
| R_{thJC} | (per diode) | | | 2.3 K/W |

Component

| Symbol | Conditions | Maximum Ratings | |
|------------|--|-----------------|--------------------|
| T_{VJ} | | -55...+150 | $^{\circ}\text{C}$ |
| T_{stg} | | -55...+125 | $^{\circ}\text{C}$ |
| V_{ISOL} | $I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$ | 2500 | V~ |
| F_c | mounting force with clip | 20...120 | N |

| Symbol | Conditions | Characteristic Values | | |
|---------------|------------------------|-----------------------|------|------|
| | | min. | typ. | max. |
| d_S, d_A | pin - pin | 1.7 | | mm |
| d_S, d_A | pin - backside metal | 5.5 | | mm |
| R_{thCH} | with heatsink compound | | 0.15 | K/W |
| Weight | | | 9 | g |

Dimensions in mm (1 mm = 0.0394")
