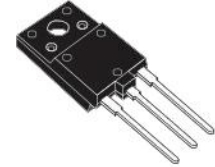
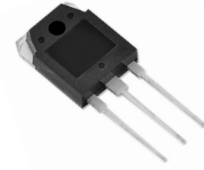


# ESTF45D60UHB/A

## TURBO 2 ULTRAFast HIGH VOLTAGE RECTIFIER

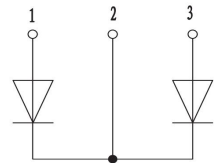
### Features

- Ultra fast switching
- Low reverse recovery current
- Reduces switching losses
- Low thermal resistance
- RoHS product



### Applications

- Switching Power Supplies



### Absolute Maximum Ratings @ Tc=25°C

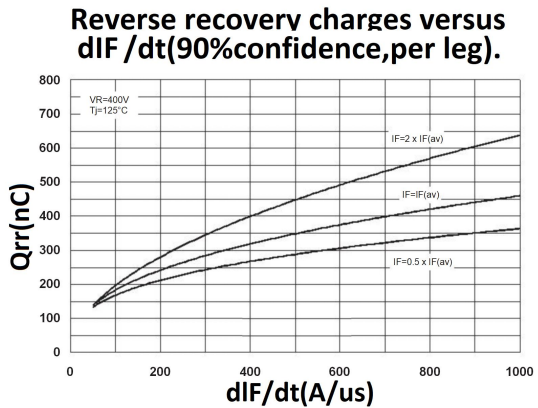
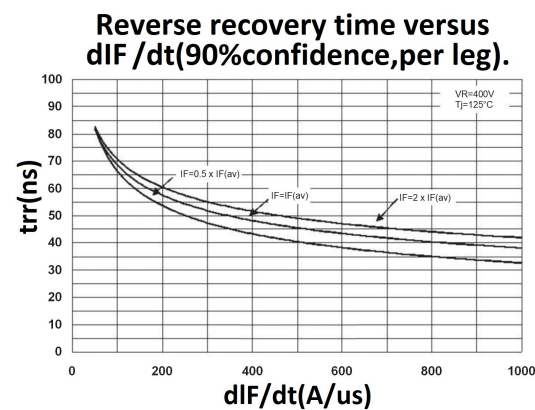
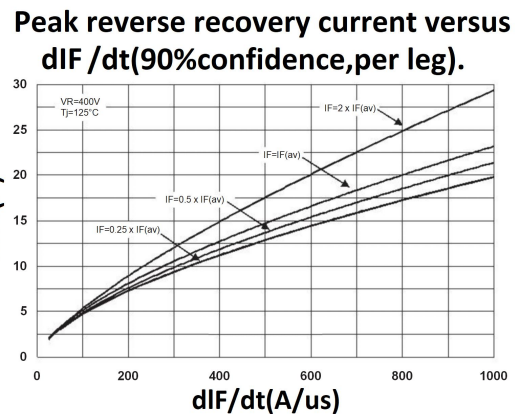
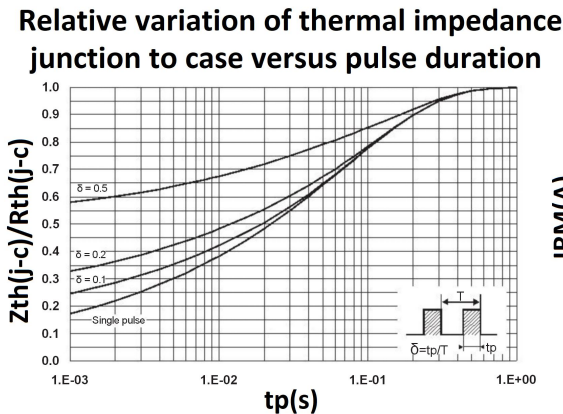
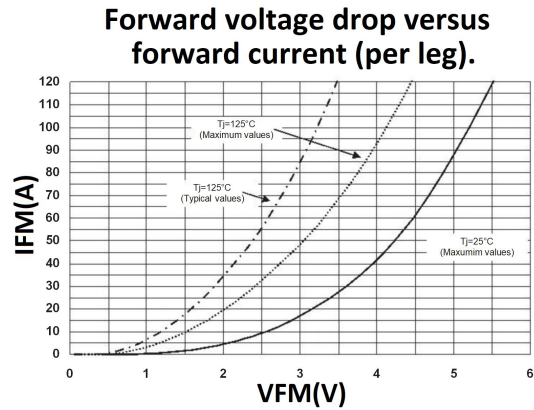
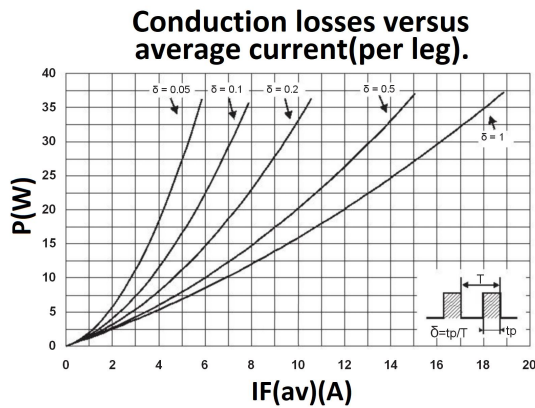
| Symbol              | Parameter                             | ratings  | Unit |
|---------------------|---------------------------------------|----------|------|
| V <sub>RRM</sub>    | Repetitive peak reverse voltage @50μA | 600      | V    |
| V <sub>RWM</sub>    | Working Peak Reverse Voltage          | 600      | V    |
| I <sub>F(AV)</sub>  | Average forward current @Per diode    | 22.5     | A    |
|                     | Average forward current @Per device   | 45       | A    |
| I <sub>FSM</sub>    | Peak one Cycle Surge Forward @t=10ms  | 120      | A    |
| I <sub>F(RMS)</sub> | RMS forward current                   | 45       | A    |
| T <sub>j</sub>      | Junction Temperature                  | -55~+175 | °C   |
| T <sub>STG</sub>    | Storage temperature range             | -65~+175 | °C   |

### Electrical Specifications @ Tc=25°C

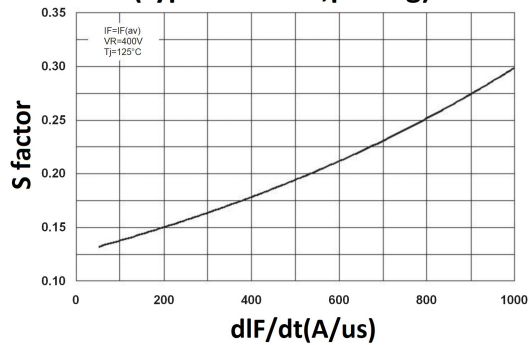
| Symbol          | Parameter                                                                |                                  | Ratings |      |     | Unit |
|-----------------|--------------------------------------------------------------------------|----------------------------------|---------|------|-----|------|
|                 |                                                                          |                                  | Min     | Typ  | Max |      |
| I <sub>R</sub>  | T <sub>j</sub> =25°C                                                     | V <sub>R</sub> =V <sub>RRM</sub> |         |      | 60  | μA   |
|                 | T <sub>j</sub> =125°C                                                    |                                  |         | 70   | 800 | μA   |
| V <sub>F</sub>  | T <sub>j</sub> =25°C                                                     | I <sub>F</sub> =20A              |         |      | 2.9 | V    |
|                 | T <sub>j</sub> =125°C                                                    |                                  |         | 1.4  | 1.8 | V    |
| T <sub>rr</sub> | I <sub>F</sub> =1A, V <sub>R</sub> =30V, di <sub>F</sub> /dt=-50A/μs     |                                  |         |      | 50  | ns   |
| I <sub>RM</sub> | V <sub>R</sub> =400V,I <sub>F</sub> =15A<br>di <sub>F</sub> /dt=-200A/μs | T <sub>j</sub> =125°C            |         | 7.5  | 9.0 | A    |
| S factor        |                                                                          |                                  |         | 0.15 |     |      |
| Q <sub>rr</sub> |                                                                          |                                  |         | 220  |     | nC   |

|                      |                                                |         |  |     |      |
|----------------------|------------------------------------------------|---------|--|-----|------|
| tfr                  | IF=15A, dIF/dt=1<br>20A/μs                     | Tj=25°C |  | 200 | ns   |
| V <sub>FP</sub>      | VFR=1.1xV <sub>Fmax</sub>                      |         |  | 6   | V    |
| R <sub>th(j-c)</sub> | Thermal<br>resistance from<br>junction to case | TO-3PN  |  | 0.6 | °C/W |
|                      |                                                | TO-3PF  |  | 1.3 | °C/W |

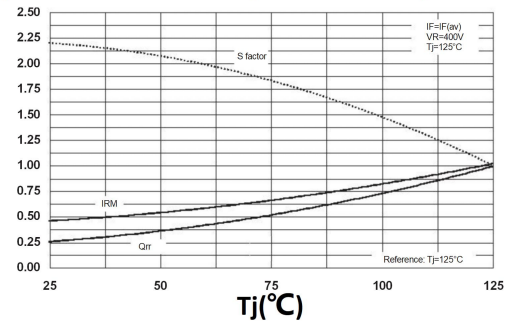
### Typical Performance Curves



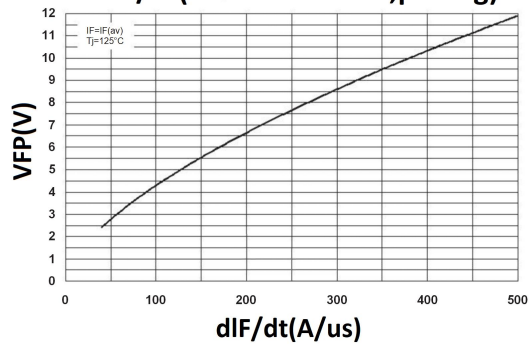
**Softness factor versus  $dI_F/dt$   
(typical values, per leg).**



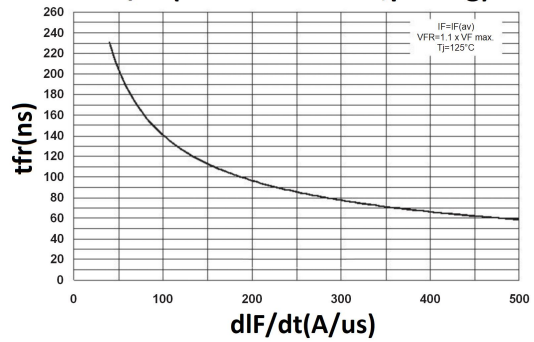
**Relative variation of dynamic parameters versus junction temperature**



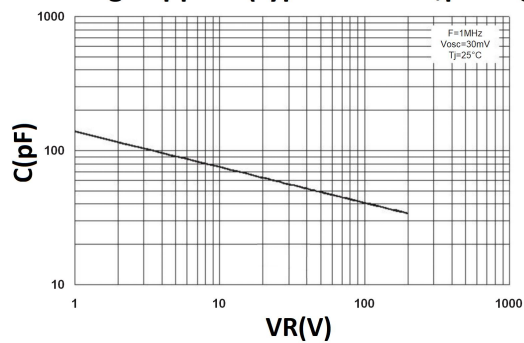
**Transient peak forward voltage versus  $dI_F/dt$  (90% confidence, per leg).**



**Forward recovery time versus  $dI_F/dt$  (90% confidence, per leg).**



**Junction capacitance versus reverse voltage applied (typical values, per leg).**



**TO-3PN**

**Unit:mm**

The technical drawing illustrates the TO-3PN power transistor package with the following dimensions:

- Top View:**
  - Overall width:  $15.6 \pm 0.3$
  - Width excluding mounting holes:  $14.0 \pm 0.2$
  - Mounting hole diameter:  $\phi 3.2 \pm 0.2$
  - Distance from top edge to mounting hole centerline:  $2.6 \pm 0.2$
  - Angle of mounting tabs:  $30^\circ \pm 5^\circ$
  - Distance from mounting hole centerline to tab edge:  $3.5 \pm 0.2$
  - Distance from mounting hole centerline to bottom edge:  $1.2 \pm 0.2$
  - Distance from mounting hole centerline to bottom edge (alternative measurement):  $1.3 \pm 0.3$
  - Total height:  $20.0 \pm 0.3$
  - Distance from bottom edge to base lead attachment point:  $15.0 \pm 0.3$
- Side View:**
  - Base lead thickness:  $0.6 \pm 0.1$
  - Base lead length:  $20.0 \pm 0.5$
  - Flange thickness:  $2.0 \pm 0.3$
  - Flange width:  $1.6 \pm 0.3$
  - Flange depth:  $1.0^{+0.3}_{-0.1}$
- Bottom View:**
  - Lead pitch:  $0.6 \pm 0.2$
  - Lead width:  $0.6 \pm 0.2$
  - Lead length:  $5.45 \pm 0.2$
  - Lead thickness:  $2.4 \pm 0.3$

