## General Description

This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.




SMAF

## Features

- Low conduction loss due to low $V_F$
- Extremely low switching loss by tiny $Q_C$
- Highly rugged due to better surge current
- Industrial standard quality and reliability



## Applications

- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

| Part Number | Package | Brand |
|---|---|---|
| PNU65020EPX | SMAF | HXY MOSFET |

## Maximum Ratings ($T_C$=25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 650 | V | |
| $V_{RSM}$ | Surge Peak Reverse Voltage | 650 | V | |
| $V_R$ | DC Peak Reverse Voltage | 650 | V | |
| $I_F$ | Continuous Forward Current | 6<br>3<br>2 | A | $T_C$=25˚C<br>$T_C$=135˚C<br>$T_C$=152˚C |
| $I_{FRM}$ | Repetitive Peak Forward Surge Current | 12<br>8 | A | $T_C$=25˚C, $t_P$=10 ms, Half Sine Pulse<br>$T_C$=110˚C, $t_P$=10 ms, Half Sine Pulse |
| $I_{FSM}$ | Non-Repetitive Forward Surge Current | 18<br>14 | A | $T_C$=25˚C, $t_P$=10 ms, Half Sine Pulse<br>$T_C$=110˚C, $t_P$=10 ms, Half Sine Pulse |
| $P_{tot}$ | Power Dissipation | 12<br>8 | W | $T_C$=25˚C<br>T =110˚C |
| $\int i^2dt$ | $i^2t$ value | 1.62<br>0.98 | $A^2s$ | $T_C$=25˚C, $t_P$=10 ms<br>$T_C$=110˚C, $t_P$=10 ms |
| $T_J$ | Operating Junction Range | -55 to +175 | ˚C | |
| $T_{stg}$ | Storage Temperature Range | -55 to +150 | ˚C | |

## Electrical Characteristics

| Parameter | Symbol | Value | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | min. | typ. | max. | | |
| Forward Voltage | $V_F$ | -<br>- | 1.3<br>1.5 | 1.5 | V | $I_F$=2A<br>$T_j$=25°C<br>$T_j$=175°C |
| Reverse Current | $I_R$ | -<br>- | 2<br>40 | 50<br>150 | μA | $V_R$=650V<br>$T_j$=25°C<br>$T_j$=175°C |
| Total Capacitive Charge | $Q_C$ | - | 3.7 | - | nC | $V_R$=400V，$T_j$=25°C<br>$Q_C = \int_0^{V_R} C(V)dV$ |
| Total Capacitance | C | -<br>-<br>- | 181<br>10<br>8 | -<br>-<br>- | pF | $T_j$=25°C, f=1MHz<br>$V_R$=0V<br>$V_R$=200V<br>$V_R$=400V |

## Thermal Characteristics

| Symbol | Parameter | Typ. | Unit |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 7.7 | °C/W |

## Characteristics Curve

Fig 1: Forward Characteristics

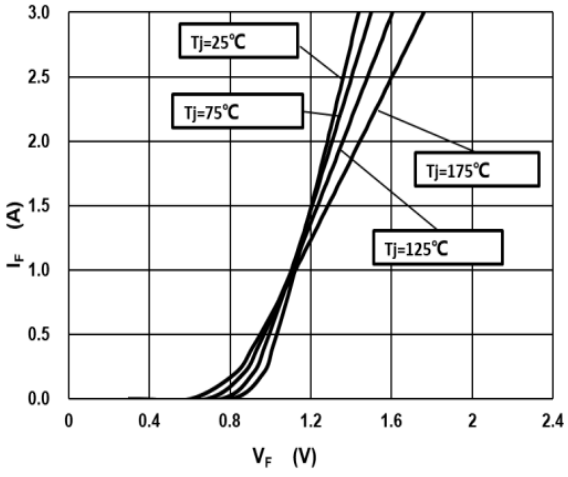



Fig 2: Reverse Characteristics

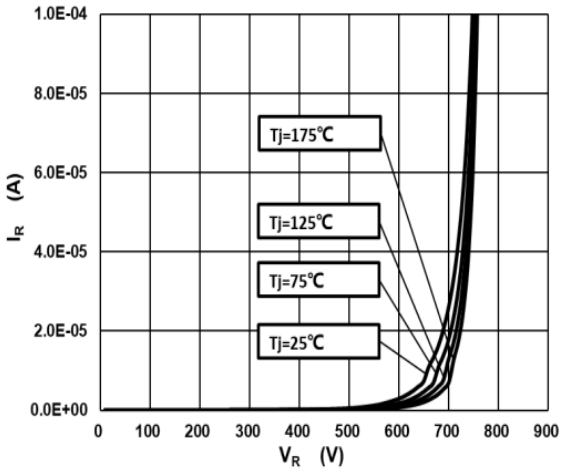


Fig 3: Current Derating

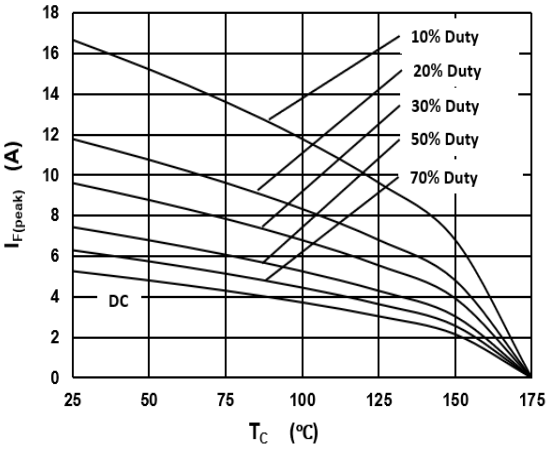



Fig 4: Power Derating

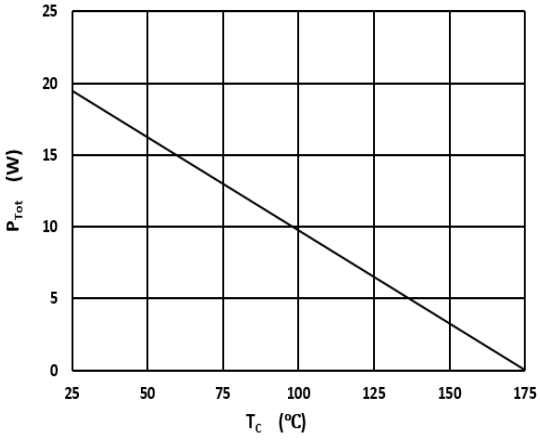



Fig 5: Capacitance vs. Reverse Voltage

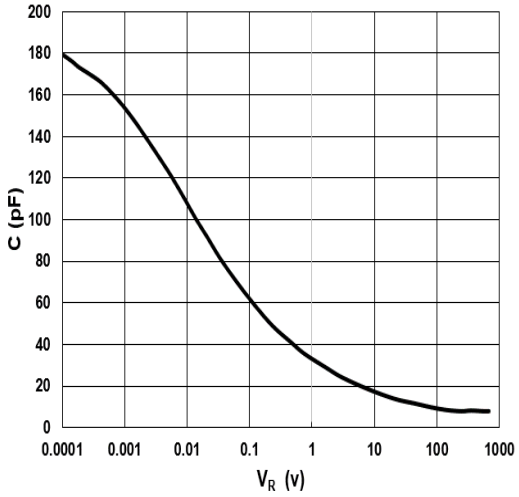



Fig 6: Reverse Charge vs. Reverse Voltage

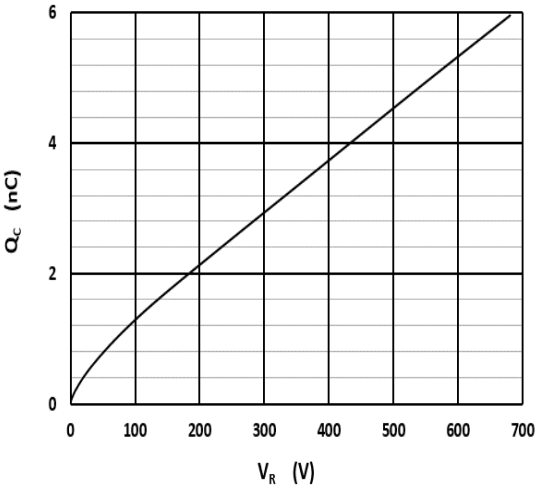



Fig 7: Typical Capacitance Stored Energy

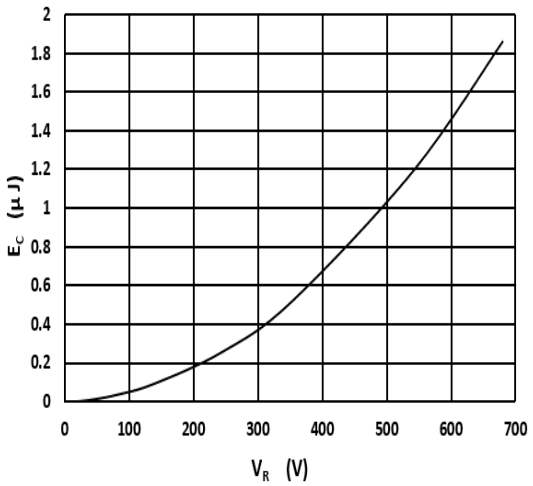
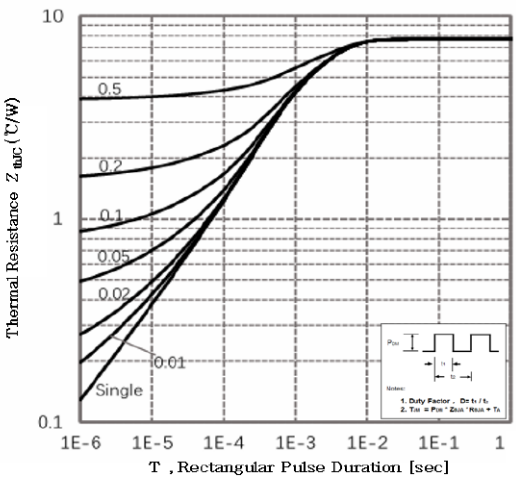
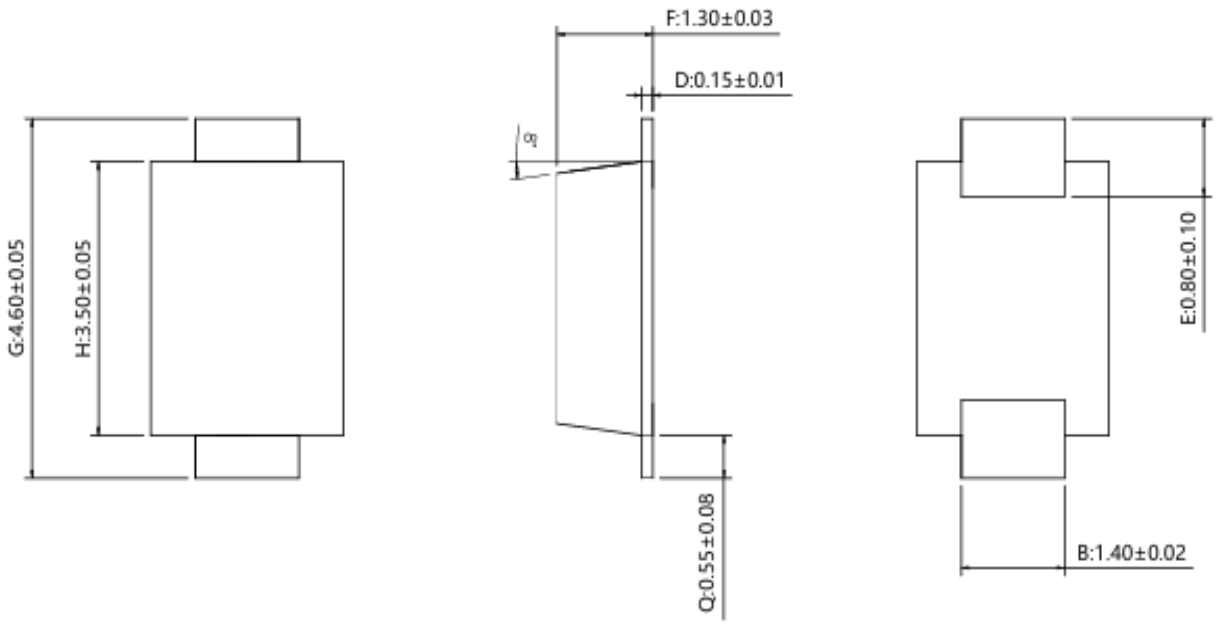
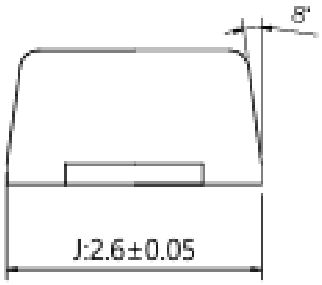



Fig 8: Transient Thermal Impandance



## Package Information
## SMAF



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## HXY MOSFET:

TPSMB28A-VR ESD5L5.0C-HXY HPTVSUC3D5VB HSD15C.TCT HSG3D15B3.3MA PJSD24CW_R1 AZ4836-01L HACPDQC5V0-HF LM393DR-HXY HCEZ36V,L3F HSEN3611D3 PESDLC2FD3V3BH AZ4007-01H RLSD32A121V 60N06 ESD5LM5.0C-HXY PESDNC2XD5VBF TPSMB100CA-VR HESD36VD3B HESDSLC3V3D3B PESDNC2XD5VBL PJEC5V0M1FN2 BV05C-H HRCLAMP3371ZCTFT HSTS521050B331 PESDSC2FD5VU AQ15C-01FTG HAZ4007-01H HLY323BC1524L HSEN2411D3