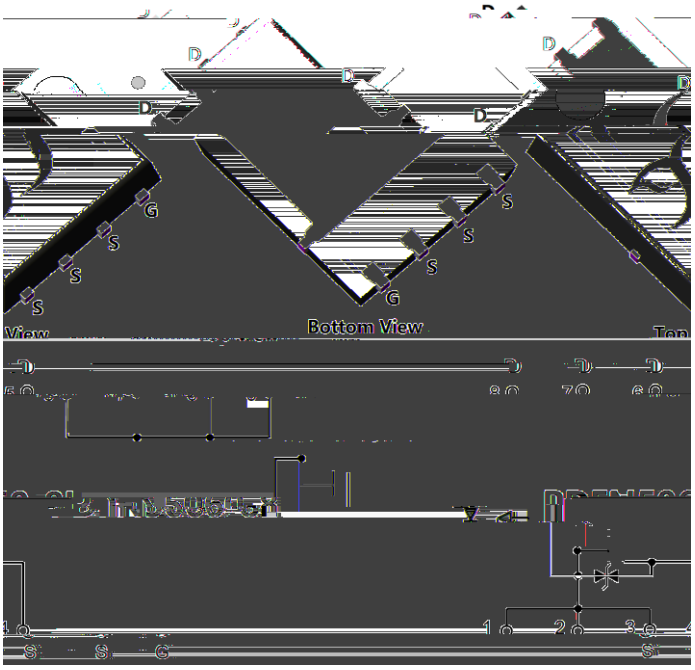
# P-Channel Enhancement Mode Field Effect Transistor




## Product Summary

- $V_{DS}$ -60V
- $I_D$ -46A
- $R_{DS(ON)}$( at $V_{GS}$=-10V) 27mΩ
- 100% EAS Tested
- 100% $V_{DS}$ Tested
- ESD Level(HBM) Class 3A

## General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free
- Part no. with suffix “Q” means AEC-Q101 qualified

## Applications

- Power management functions
- Synchronous-rectification application
- DC-DC convertor

## ■ Limiting Values

| Parameter | Conditions | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-source Voltage | | | $V_{DS}$ | - | -60 | V |
| Gate-source Voltage (Note 4) | | | $V_{GS}$ | -20 | 20 | |
| Continuous Drain Current (Note 1,2) | Steady-State | $T_A$=25℃,$V_{GS}$=-10V | $I_D$ | - | -6.7 | A |
| | | $T_A$=100℃,$V_{GS}$=-10V | | - | -4.7 | |
| Continuous Drain Current (Note 1,3) | Steady-State | $T_C$=25℃,$V_{GS}$=-10V,Chip limitation | | - | -46 | |
| | | $T_C$=100℃,$V_{GS}$=-10V | | - | -32 | |
| Pulsed Drain Current | $T_C$=25 ,$t_p$≤10μs | | $I_{DM}$ | - | -160 | |
| Maximum Body-Diode Continuous Current | $T_C$=25 | | $I_S$ | | -46 | |
| Avalanche Energy (non-repetitive ) | $T_J$=25℃,$V_G$=-10V,$R_G$=25Ω,L=0.5mH,$I_{AS}$=-21A | | EAS | - | 110.25 | mJ |
| Total Power Dissipation (Note 1,2) | Steady-State | $T_A$=25℃ | $P_D$ | - | 2.6 | W |
| | | $T_A$=100℃ | | - | 1.3 | |
| Total Power Dissipation (Note 1,3) | Steady-State | $T_C$=25℃ | | - | 125 | |
| | | $T_C$=100℃ | | - | 62.5 | |
| Junction and Storage Temperature Range | | | $T_J$ ,$T_{STG}$ | -55 | 175 | ℃ |

## ■Thermal Resistance

| Parameter | | Symbol | Typ | Max | Units |
|---|---|---|---|---|---|
| Thermal Resistance Junction-to-Ambient (Note 2) | Steady-State | $R_{\theta JA}$ | - | 56 | ℃/W |
| Thermal Resistance Junction-to-Case | Steady-State | $R_{\theta JC}$ | - | 1.2 | |

## ■ Ordering Information (Example)

| PREFERED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| YJG027P06AKHQ | F1 | YJG027P06AK | 5000 | 10000 | 100000 | 13“ reel |

## Typical Electrical and Thermal Characteristics Diagrams

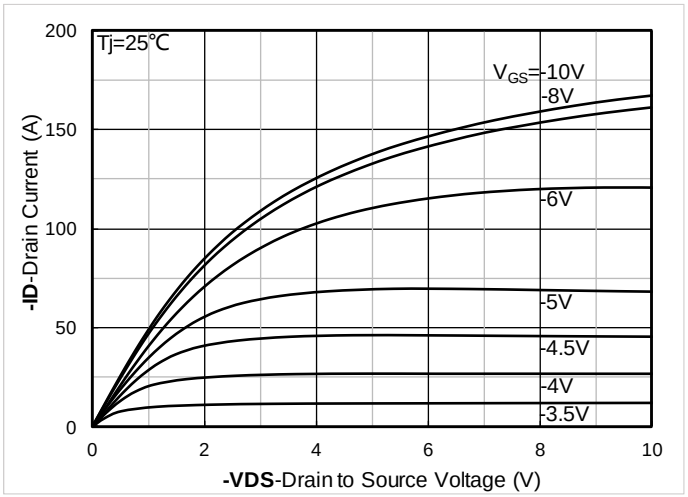



Figure 1. Output Characteristics; typical values

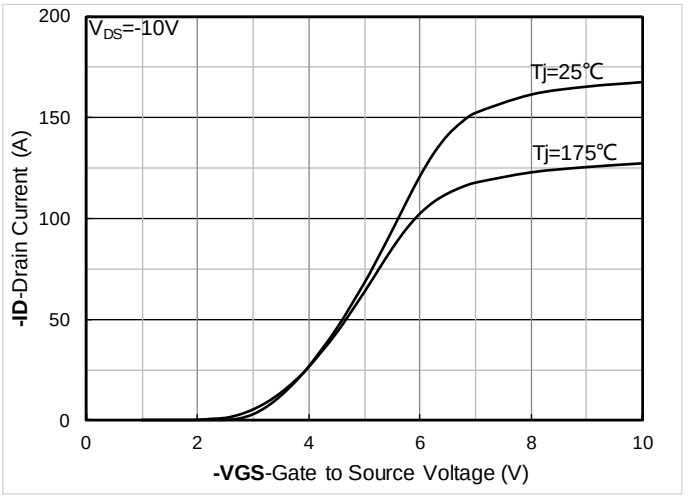



Figure 2. Transfer Characteristics; typical values

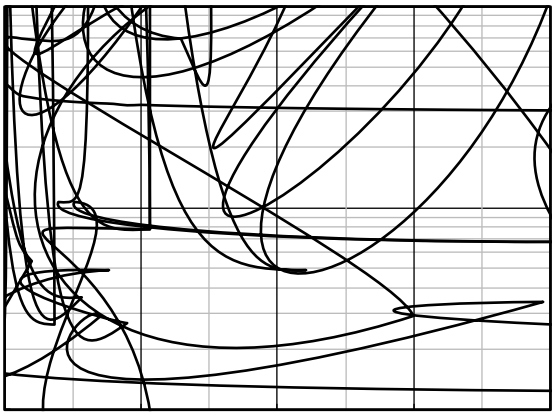


Figure 3. Capacitance Characteristics; typical values

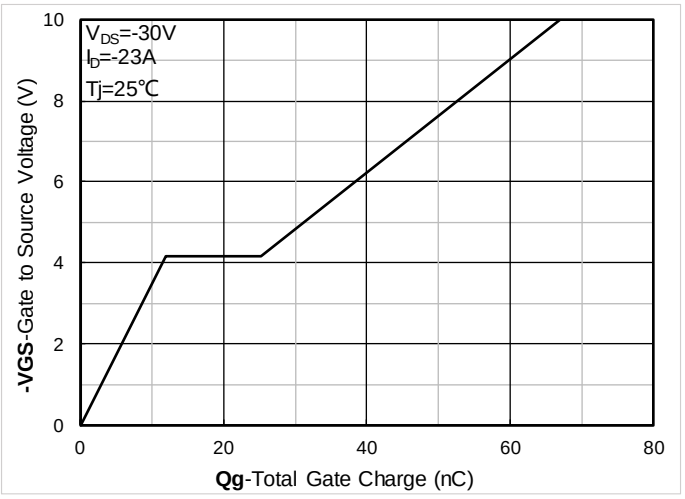



Figure 4. Gate Charge; typical values

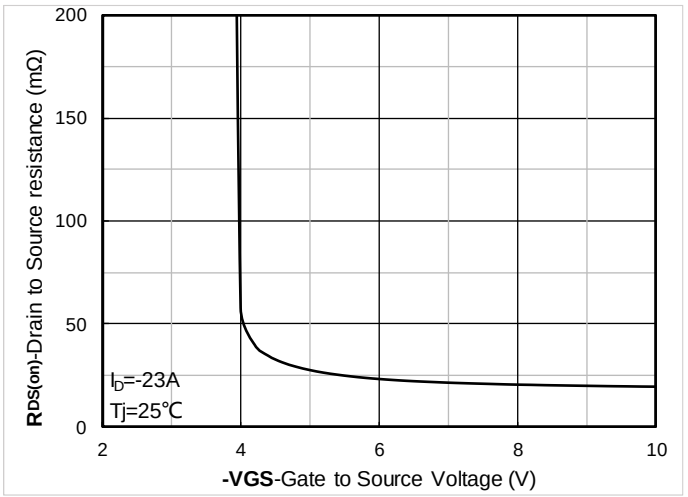



Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

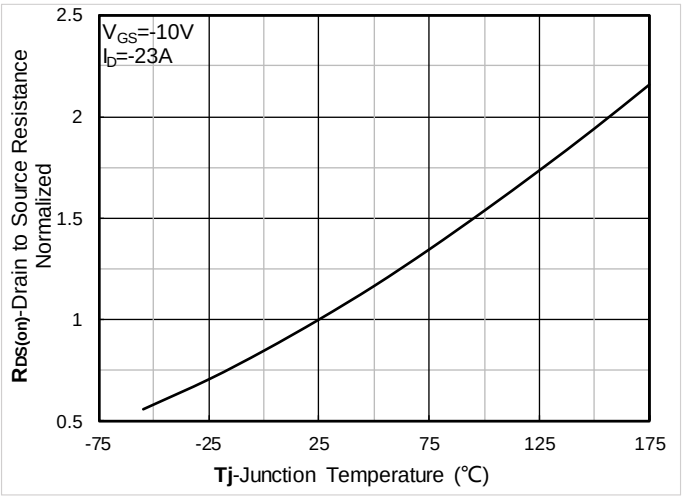
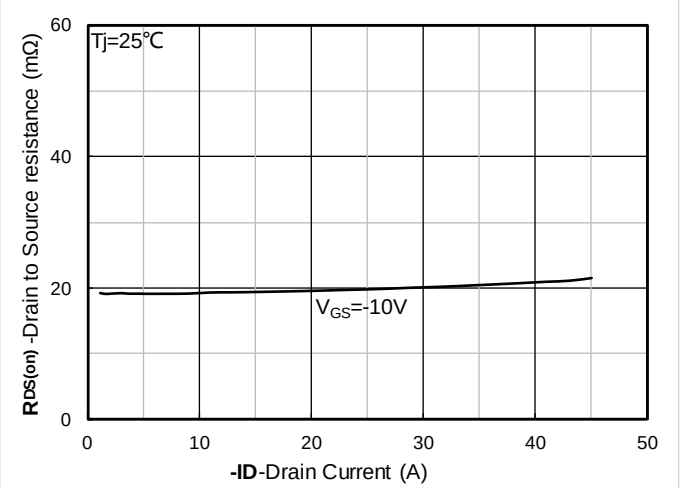



Figure 6. Normalized On-Resistance


Tj=25℃
$V_{GS}$=-10V
$R_{DS(on)}$ -Drain to Source resistance (mΩ)
-ID-Drain Current (A)
0
20
40
60
0
10
20
30
40
50

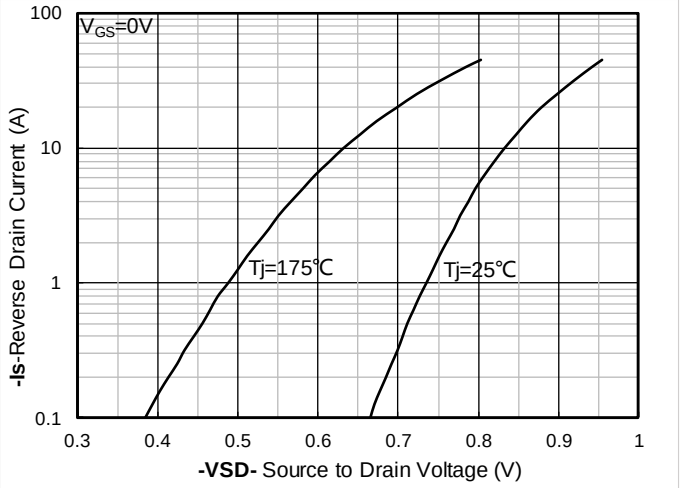

$V_{GS}$=0V
Tj=175℃
Tj=25℃
-Is-Reverse Drain Current (A)
-VSD- Source to Drain Voltage (V)
100
10
1
0.1
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

Figure 7. $R_D$

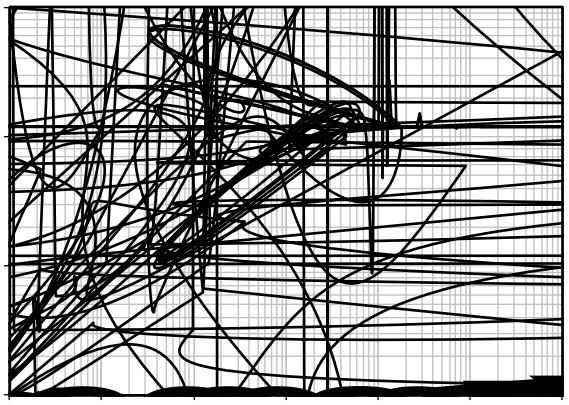


Figure 13. Maximum Transient Thermal Impedance

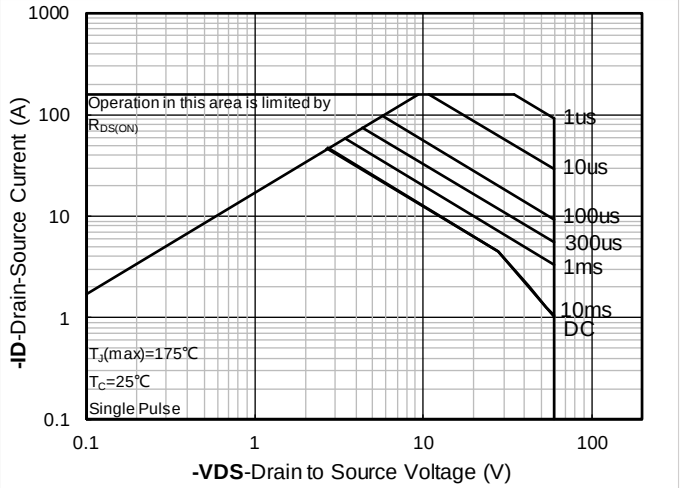
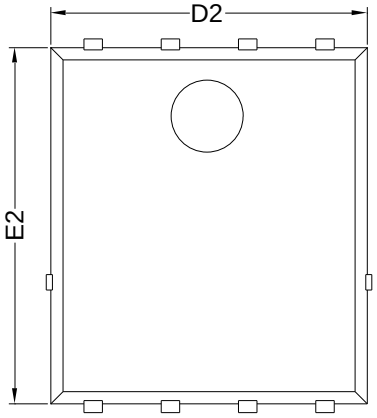
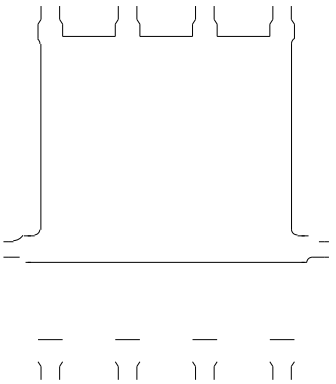



Figure 14. Safe Operation Area

## ■ PDFN5060-8L-B-1.1MM Package information




Top View



Bottom View

Side View

| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| D | 5.15 | 5.35 | 5.55 |
| E | 5.95 | 6.15 | 6.35 |
| A | 1.00 | 1.10 | 1.20 |
| A1 | | 0.254 BSC | |
| A2 | | | 0.10 |
| D1 | 3.92 | 4.12 | 4.32 |
| E1 | 3.52 | 3.72 | 3.92 |
| D2 | 5.00 | 5.20 | 5.40 |
| E2 | 5.66 | 5.86 | 6.06 |
| E3 | | 0.254 REF | |
| E4 | | 0.21 REF | |
| L1 | 0.56 | 0.66 | 0.76 |
| L2 | | 0.50 BSC | |
| b | 0.31 | 0.41 | 0.51 |
| e | | 1.27 BSC | |

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.

## ■ Marking Information


Note
1. All marking is at middle of the product body
2. All marking is in laser printing
3. YJG027P06AK is marking code, YYWW is date code, “YY” is year, “WW” is week
4. Body color: Black

## Disclaimer

The information presented in this document is for reference only. YangU6(d)-3( )-108(i)-4(n)-3( )-108(th)-5(i)-4(s)-6( )-108(d)-3(o)-3(c)7( )-1