

UPFS320P

PRELIMINARY

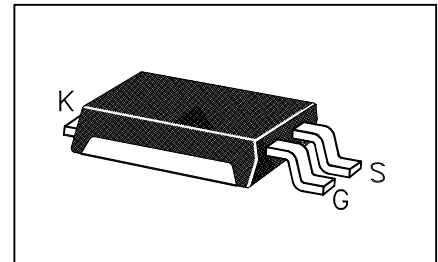
Features

- POWERMITE 3 Surface Mount Package
- MOSFET with Schottky Rectifier for reverse voltage blocking
- Single 3 leaded device replaces 2 individual components
- Integral Heat Sink / Locking Tabs
- Supplied in 16mm Tape and Reel – 6000 units/reel
- Superior Low Thermal and Electrical capability

**SURFACE MOUNT
P – CHANNEL
MOSKEY®**

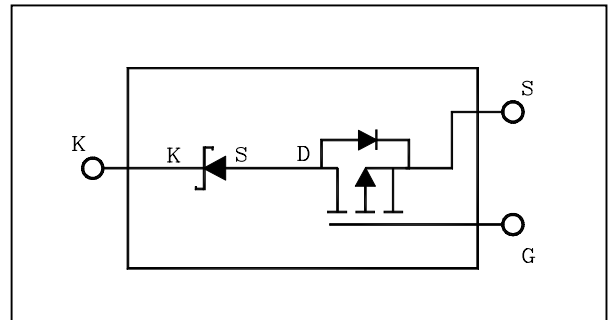
Mechanical Characteristics

- Footprint Area of 16.51 mm²
- Case: Molded Epoxy
- Meets UL94VO at 1/8 inch
- Weight: 72 milligrams
- Lead and Mounting Temperatures: 260°C max for 10 seconds



Description

The MOSKEY® combines a MOSFET with a Schottky Rectifier to provide reverse blocking capability in a single three leaded package. This device is well suited for applications such as battery chargers and switching where the intrinsic source-drain diode is an undesirable feature.



Note: $V_{ks} = V_{ds} (\text{Mosfet}) + V_f (\text{Rectifier})$

Absolute Maximum Ratings at 25°C

| RATING | SYMBOL | VALUE | UNIT |
|---------------------------|--------|--------------|-------|
| Cathode-to-Source Voltage | VKSS | +/- 20 | Vdc |
| Gate-to-Source Voltage | VGS | +/- 8 | Vdc |
| Cathode Current: | | | |
| Continuous @ TA=25°C | IK | 3.0 | Adc |
| Single Pulsed | IKM | 11.0 | Apk |
| Total Power Dissipation | PD (1) | 2.0 | Watts |
| Storage Temperature | T stg | -55 to 150°C | C |
| Operating Temperature | T op | -55 to 150°C | C |

Thermal Characteristics

Thermal Resistance:

| | | | |
|-------------------------|---------|-----|---------|
| Junction to Tab | Rjtab | 5 | °C/Watt |
| (1) Junction-to-tab | Rja (1) | 60 | °C/Watt |
| (2) Junction-to-ambient | Rja (2) | 120 | °C/Watt |

(1) Mounted on 2" square by 0.06" thick FR4 board with a 1" x1" square 2 ounce copper pattern.

(2) Mounted on 0.06" thick FR4 board, using recommended footprint, with 2 ounce copper

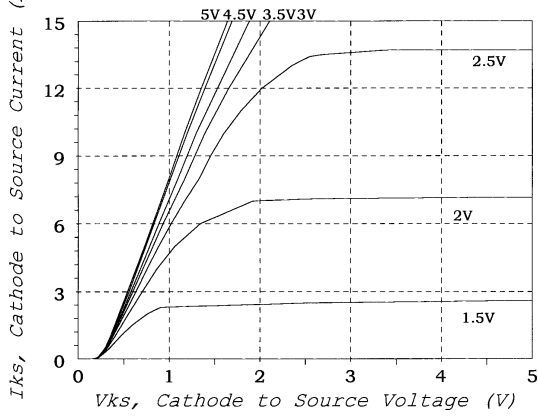
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Electrical Characteristics at 25°C

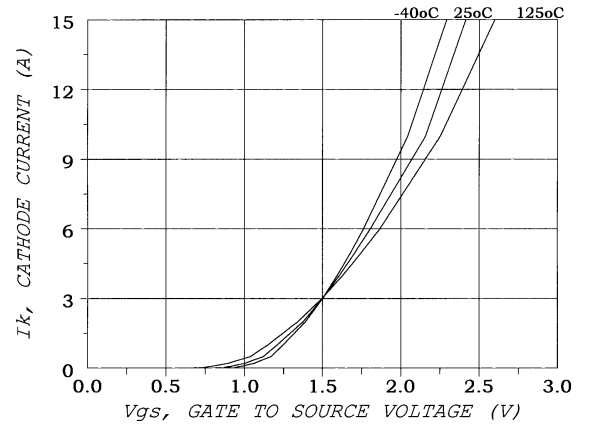
| ELECTRICAL CHARACTERISTICS (TA = 25 C unless otherwise noted) | | | | | | |
|--|--|---|-----|-----|-----|-------|
| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
| OFF CHARACTERISTICS | | | | | | |
| BVKSS | Cathode-Source Breakdown Voltage | VGS= 0V; IK = 250uA | 20 | | | V |
| IKSSF | Zero Gate Voltage Cathode Current: Forward | VKS= -16V, VGS = 0V | | | 1 | uA |
| IKSSR | Zero Gate Voltage Cathode Current: Reverse | VKS= +16V, VGS = 0V | | | 1.5 | mA |
| IGSS | Gate-Body Leakage Current | VGS= +/- 8V, VDS = 0V | | | 100 | nA |
| ON CHARACTERISTICS (pulsed 500us max, duty cycle < 2%) | | | | | | |
| VGS(TH) | Gate Threshold Voltage | VDS ≥ VGS; IK = 250uA | 0.4 | 0.6 | 1 | V |
| DELTA VGS(TH)/TJ | Gate Threshold Voltage Temp Coefficient | IK = 250uA, Reference to 25C | | 2.1 | | mV/C |
| VKS (ON) | Static Cathode-Source On Voltage | VGS = 4.5 V; IK = 3A | | | 700 | mV |
| VKS (ON) | Static Cathode-Source On Voltage | VGS = 4.5 ; IK = 1A | | | 400 | mV |
| IK(ON) | On State Cathode Current | VGS = 4.5 V; VKS = 5V | 10 | | | A |
| Gfs | Forward Transconductance | VDS = 10 V; IK = 3 A | | 6.5 | | S |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Ciss | Input Capacitance | VKS = 10 V; VGS = 0V, F = 1MHz | | 700 | | pF |
| Coss | Output Capacitance | VKS = 10 V; VGS = 0V, F = 1MHz | | 270 | | pF |
| Crss | Reverse Transfer Capacitance | VKS = 10 V; VGS = 0V, F = 1MHz | | 100 | | pF |
| SWITCHING CHARACTERISTICS | | | | | | |
| Td(ON) | Turn On Delay Time | VDD = 5V, IK = 1A, VGS = 4.5V, Rg = 6 Ω | | 8 | 16 | ns |
| Tr | Turn On Rise Time | VDD = 5V, IK = 1A, VGS = 4.5V, Rg = 6 Ω | | 24 | 38 | ns |
| Td(OFF) | Turn Off Delay time | VDD = 5V, IK = 1A, VGS = 4.5V, Rg = 6 Ω | | 50 | 80 | ns |
| Tf | Turn Off Fall time | VDD = 5V, IK = 1A, VGS = 4.5V, Rg = 6 Ω | | 29 | 45 | ns |
| Qg | Total Gate Charge | VDS = 5V, IK = 3A, VGS = 4.5V | | 9.5 | 13 | nC |
| Qgs | Gate-Source Charge | VDS = 5V, IK = 3A, VGS = 4.5V | | 1.3 | | nC |
| Qgd | Gate-Cathode Charge | VDS = 5V, IK = 3A, VGS = 4.5V | | 2.2 | | nC |

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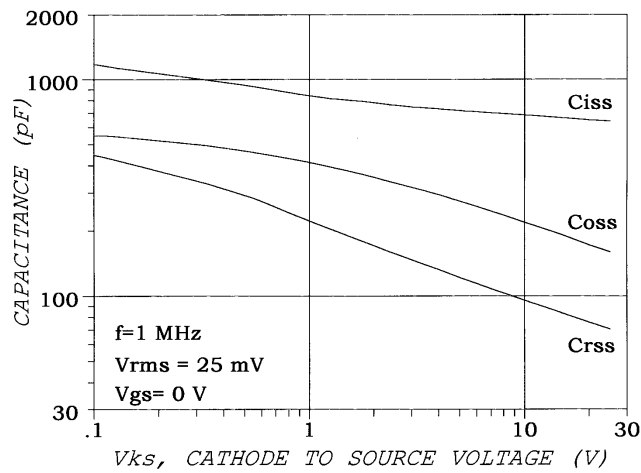
On-Region Characteristics



Transfer Characteristics

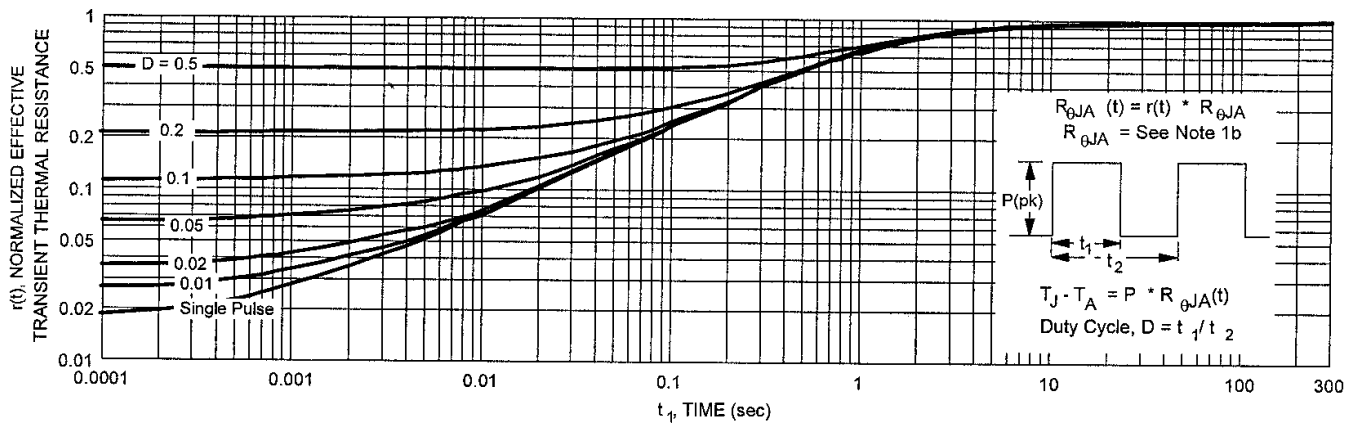
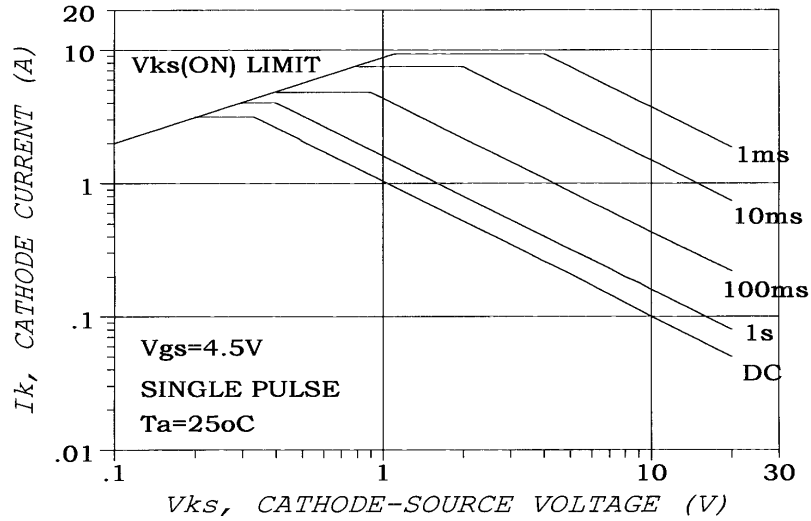


Capacitance Characteristics

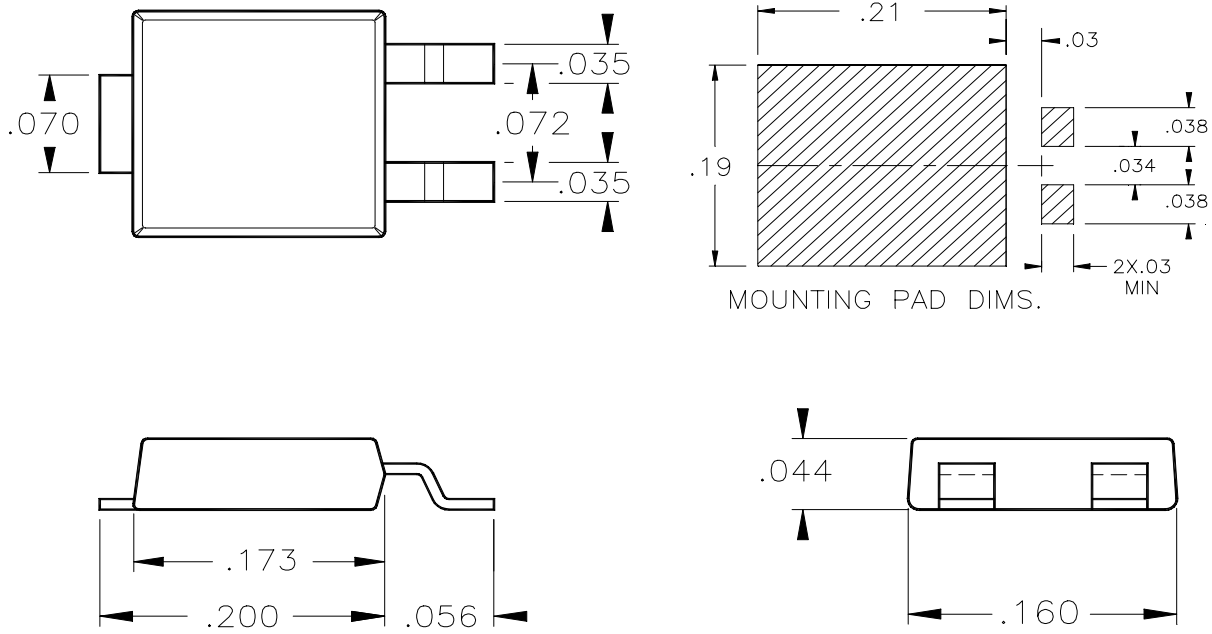


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Maximum Safe Operating Area



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DIMENSIONS ARE NOMINAL INCHES

MECHANICAL SPECIFICATIONS