



UTM4953-H

POWER MOSFET

-5A, -30V P-CHANNEL MOSFET

DESCRIPTION

The UTC **UTM4953-H** is a P-Channel MOSFET, it uses UTC's advanced technology to provide the customers with fast switching, etc.

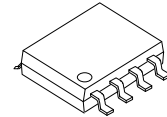
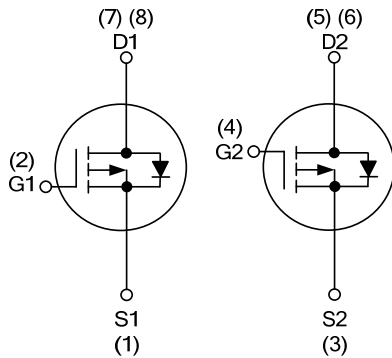
The UTC **UTM4953-H** is suitable for high efficiency fast switching applications, etc.

FEATURES

* $R_{DS(ON)} < 55m\Omega$ @ $V_{GS} = -10V$, $I_D = -3A$

* Fast switching

SYMBOL



SOP-8

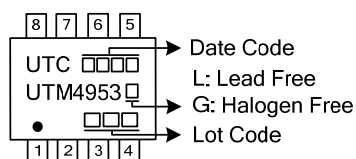
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | | | | | | Packing |
|-----------------|----------------|---------|----------------|----|----|----|----|----|----|----|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| UTM4953L-S08-R | UTM4953G-S08-R | SOP-8 | S1 | G1 | S2 | G2 | D2 | D2 | D1 | D1 | Tape Reel |

Note: Pin Assignment: G: Gate D: Drain S: Source

| | | | |
|----------------|--|-------------------|---|
| UTM4953G-S08-R | | (1) Packing Type | (1) R: Tape Reel |
| | | (2) Package Type | (2) S08: SOP-8 |
| | | (3) Green Package | (3) G: Halogen Free and Lead Free, L: Lead Free |

MARKING



■ ABSOLUTE MAXIMUM RATING ($T_C=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|-------------------------------|---------------------------------|-----------|---------------|---------------------|
| Drain-Source Voltage | | V_{DSS} | -30 | V |
| Gate-Source Voltage | | V_{GSS} | ± 20 | V |
| Continuous Drain Current | $T_C=25^\circ\text{C}$ | I_D | -5 | A |
| | $T_C=100^\circ\text{C}$ | | -3.16 | A |
| Pulsed Drain Current (Note 1) | | I_{DM} | -20 | A |
| Power Dissipation | $T_C=25^\circ\text{C}$ | P_D | 2.1 | W |
| | Derate above 25°C | | 0.017 | W/ $^\circ\text{C}$ |
| Junction Temperature | | T_J | $-55\sim+150$ | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | $-55\sim+150$ | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

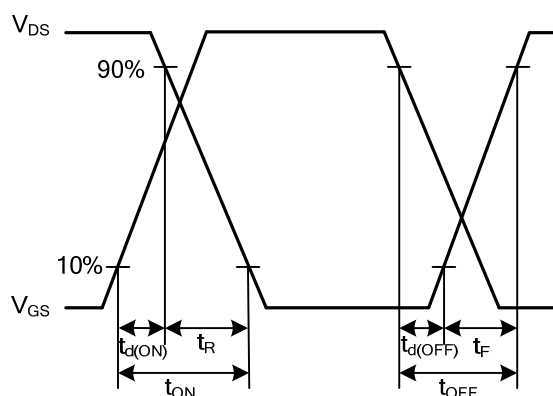
| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|--------------------|
| Junction to Ambient | θ_{JA} | 60 | $^\circ\text{C/W}$ |

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise noted)

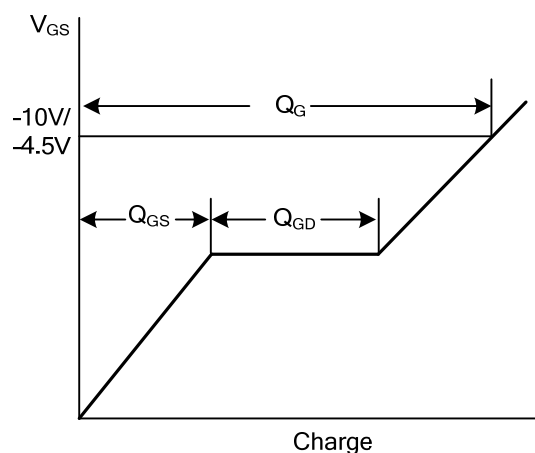
| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---------|-------------------------------------|---|------|-------|------|-------|
| OFF CHARACTERISTICS | | | | | | | |
| Drain-Source Breakdown Voltage | | BV _{DSS} | I _D =-250μA, V _{GS} =0V | -30 | | | V |
| BV _{DSS} Temperature Coefficient | | ΔBV _{DSS} /ΔT _J | Reference to 25°C , I _D =-1mA | | -0.03 | | V/°C |
| Drain-Source Leakage Current | | I _{DSS} | V _{DS} =-30V, V _{GS} =0V, T _J =25°C | | | -1 | μA |
| | | | V _{DS} =-24V, V _{GS} =0V, T _J =125°C | | | -10 | μA |
| Gate-Source Leakage Current | Forward | I _{GSS} | V _{GS} =+20V, V _{DS} =0V | | | +100 | nA |
| | Reverse | | V _{GS} =-20V, V _{DS} =0V | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | | |
| Gate Threshold Voltage | | V _{GS(TH)} | V _{DS} =V _{GS} , I _D =-250μA | -1.2 | -1.6 | -2.5 | V |
| V _{GS(TH)} Temperature Coefficient | | ΔV _{GS(TH)} | | | 4 | | mV/°C |
| Static Drain-Source On-State Resistance | | R _{DS(ON)} | V _{GS} =-10V, I _D =-3A | | 45 | 55 | mΩ |
| | | | V _{GS} =-4.5V, I _D =-2A | | 65 | 85 | mΩ |
| Forward Transconductance | | g _{FS} | V _{DS} =-10V, I _D =-3A | | 3.5 | | S |
| DYNAMIC PARAMETERS | | | | | | | |
| Input Capacitance | | C _{ISS} | V _{GS} =0V, V _{DS} =-15V, f=1.0MHz | | 560 | 810 | pF |
| Output Capacitance | | C _{OSS} | | | 55 | 80 | pF |
| Reverse Transfer Capacitance | | C _{RSS} | | | 40 | 60 | pF |
| SWITCHING PARAMETERS | | | | | | | |
| Total Gate Charge (Note 2, 3) | | Q _G | V _{DS} =-15V, V _{GS} =-4.5V, I _D =-3A | | 5.1 | 7 | nC |
| Gate to Source Charge (Note 2, 3) | | Q _{GS} | | | 2 | 3 | nC |
| Gate to Drain Charge (Note 2, 3) | | Q _{GD} | | | 2.2 | 4 | nC |
| Turn-ON Delay Time (Note 2, 3) | | t _{D(ON)} | V _{GS} =-10V, V _{DD} =-15V, I _D =-1A , R _G =6Ω | | 3.4 | 6 | ns |
| Rise Time (Note 2, 3) | | t _R | | | 10.8 | 21 | ns |
| Turn-OFF Delay Time (Note 2, 3) | | t _{D(OFF)} | | | 26.9 | 51 | ns |
| Fall-Time (Note 2, 3) | | t _F | | | 6.9 | 13 | ns |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | | |
| Diode Forward Voltage | | V _{SD} | V _{GS} =0V, I _S =-1A, T _J =25°C | | | -1 | V |
| Continuous Source Current | | I _S | V _G =V _D =0V, Force Current | | | -5 | A |
| Pulsed Source Current | | I _{SM} | | | | -10 | A |

Notes: 1. Repetitive Rating: Pulsed width limited by maximum junction temperature
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS



Resistive Switching Waveforms



Gate Charge Waveforms

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