# LMP1073KX7F 20V P-Channel Enhancement Mode MOSFETs

## Features

- -20V/-0.5A, $R_{DS(ON)}$=800mΩ@$V_{GS}$=-4.5V
- -20V/-0.2A, $R_{DS(ON)}$=1100mΩ@$V_{GS}$=-2.5V
- -20V/-0.1A, $R_{DS(ON)}$=1800mΩ@$V_{GS}$=-1.8V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-523 package design

## Product Description

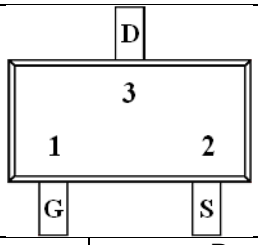
LMP1073KX7F, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent RDS(ON), low gate charge. These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

## Applications

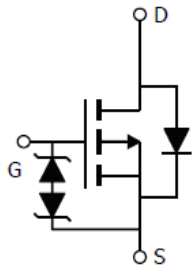
- Drivers , Relays, Solenoids, Lamps, Hammers
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

## Pin Configuration

LMP1073KX7F (SOT-523)




| PIN | Description |
|---|---|
| 1 | Gate |
| 2 | Source |
| 3 | Drain |



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## Ordering Information

| Ordering Information | | | | | |
|---|---|---|---|---|---|
| Part Number | P/N | PKG code | Pb Free code | Package | Quantity |
| LMP1073KX7F | LMP1073K | X7 | F | SOT-523 | - |

## Marking Information

| Marking Information | | |
|---|---|---|
| Part Marking | Part Number | LFC code |
| 3XWM | 3 | XWM |

## Absolute Maximum Ratings

($T_C$=25ºC Unless otherwise noted)

| Symbol | Parameter | | Typical | Unit |
|---|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | | -20 | V |
| $V_{GSS}$ | Gate-Source Voltage | | ±8 | V |
| $I_D$ | Continuous Drain Current ($T_J$=150℃) | $T_A$=25℃ | -0.5 | A |
| | | $T_A$=70℃ | -0.4 | |
| $I_{DM}$ | Pulsed Drain Current | | -1.5 | A |
| $P_D$ | Power Dissipation | $T_A$=25℃ | 0.3 | W |
| | | $T_A$=70℃ | 0.2 | |
| $R_{\theta JA}$ | Thermal Resistance Junction to ambient | | 450 | ºC/W |
| $T_J$ | Operating Junction Temperature Range | | -55 to +150 | ºC |
| $T_{STG}$ | Storage Temperature Range | | -55 to +150 | ºC |



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## Electrical Characteristics

($T_C$=25ºC Unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=-250uA | -20 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=-250uA | -0.3 | | -1.0 | |
| $I_{GSS}$ | Gate Leakage Current | $V_{DS}$=0V, $V_{GS}$=±8V | | | ±10 | uA |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=-20V, $V_{GS}$=0V | | | -1 | uA |
| | | $V_{DS}$=-16V, $V_{GS}$=0V $T_J$=85ºC | | | -30 | |
| $R_{DS(on)}$ | Drain-Source On-Resistance | $V_{GS}$=-4.5V, $I_D$=-0.5A | | 550 | 800 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-0.2A | | 780 | 1100 | |
| | | $V_{GS}$=-1.8V, $I_D$=-0.1A | | 990 | 1800 | |
| | | $V_{GS}$=-1.5V, $I_D$=-0.1A | | 1230 | 2600 | |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=-10V, $I_D$=-0.3A | | 0.8 | | S |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=-0.5A, $V_{GS}$=0V | | | -1.3 | V |
| **Dynamic** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-10V, $V_{GS}$=-4.5V, $I_D$=-0.25A | | 0.58 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 0.1 | | |
| $Q_{gd}$ | Gate-Drain Charge | | | 0.13 | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=-16V, $V_{GS}$=0V f=1MHz | | 59.8 | | pF |
| $C_{oss}$ | Output Capacitance | | | 12.1 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 6.4 | | |
| $t_{d(on)}$ | Turn-On Time | $V_{DD}$=-10V, $R_L$=47Ω, $I_D$≡-0.2A $V_{GEN}$=-4.5V, $R_G$=10Ω | | 5.1 | | ns |
| $t_r$ | | | | 8.1 | | |
| $t_{d(off)}$ | Turn-Off Time | | | 28.4 | | |
| $t_f$ | | | | 20.7 | | |



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## Typical Performance Characteristics

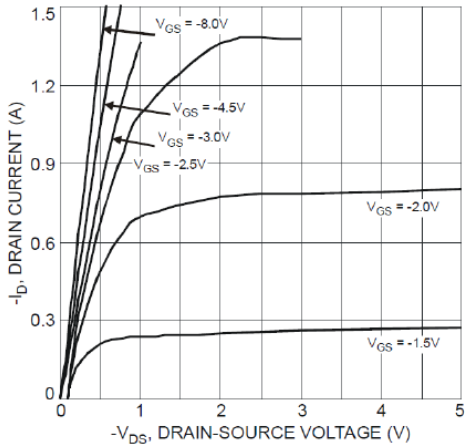


Fig. 1 Typical Output Characteristics

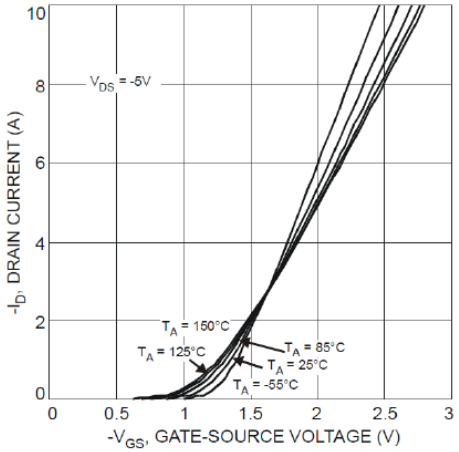


Fig. 2 Typical Transfer Characteristics

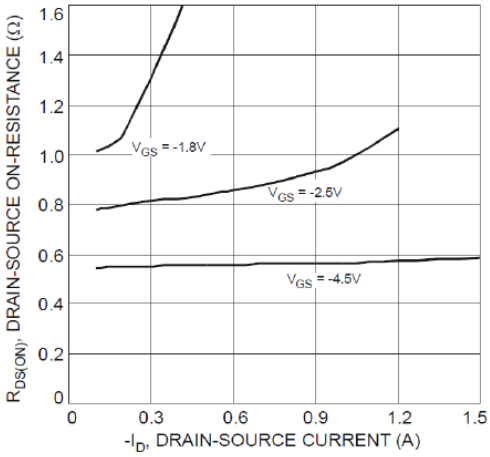


Fig. 3 Typical On-Resistance vs. $I_D$ and $V_{GS}$

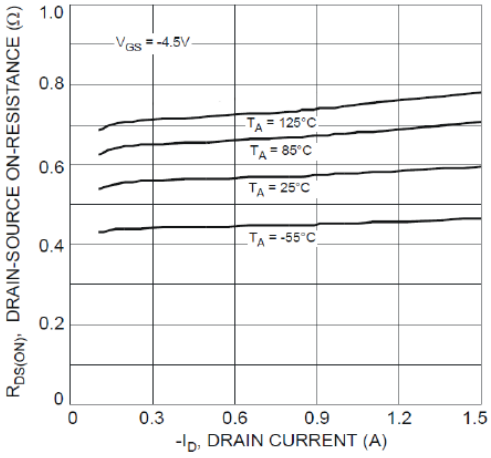


Fig. 4 Typical Drain-Source On-Resistance vs. $I_D$ and $T_A$

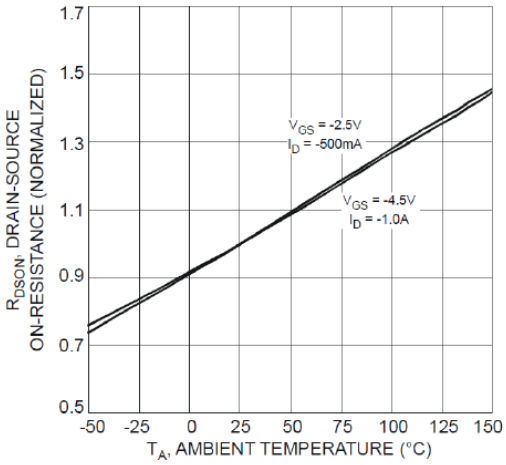


Fig. 5 On-Resistance Variation with $T_J$

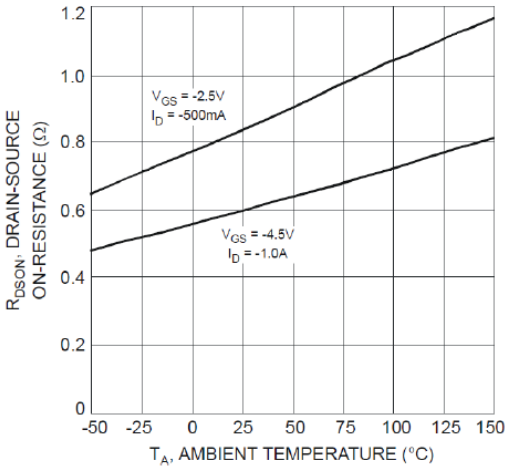


Fig. 6 On-Resistance Variation with $T_J$



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## Typical Performance Characteristics(continue)

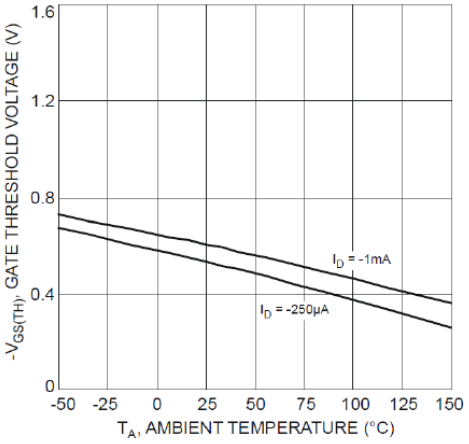


Fig. 7 Gate Threshold Variation vs. $T_A$

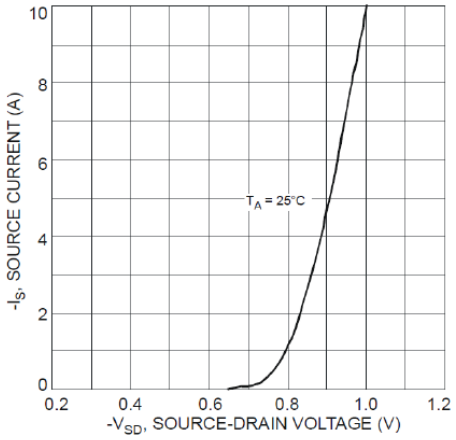


Fig. 8 Diode Forward Voltage vs. Current

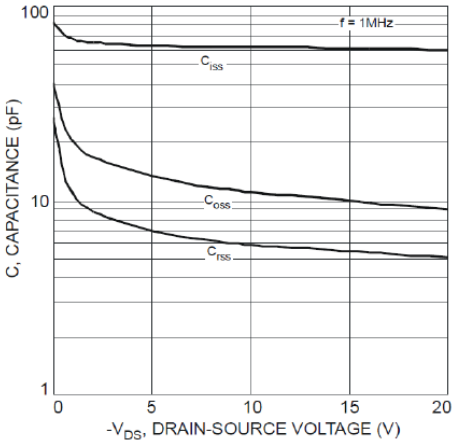


Fig. 9 Typical Capacitance

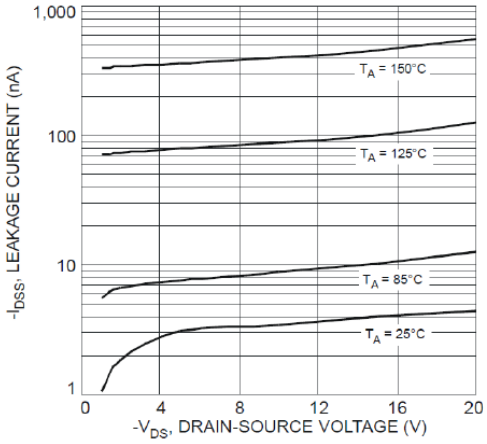


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

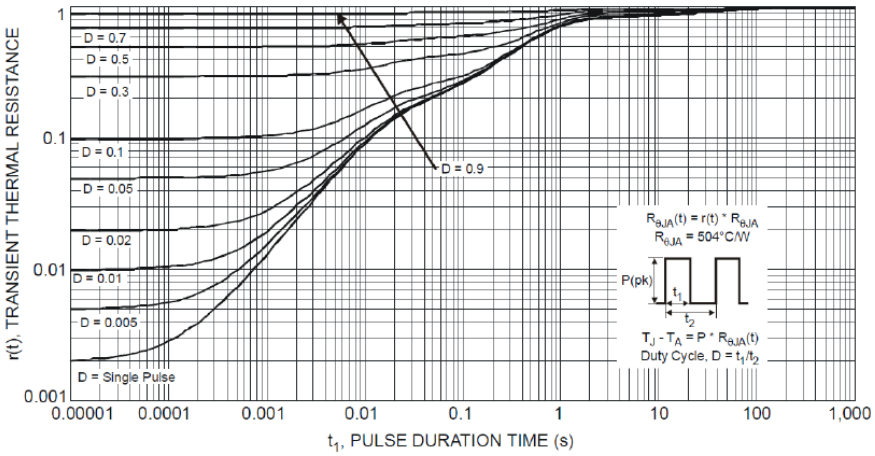


Fig. 11 Transient Thermal Response



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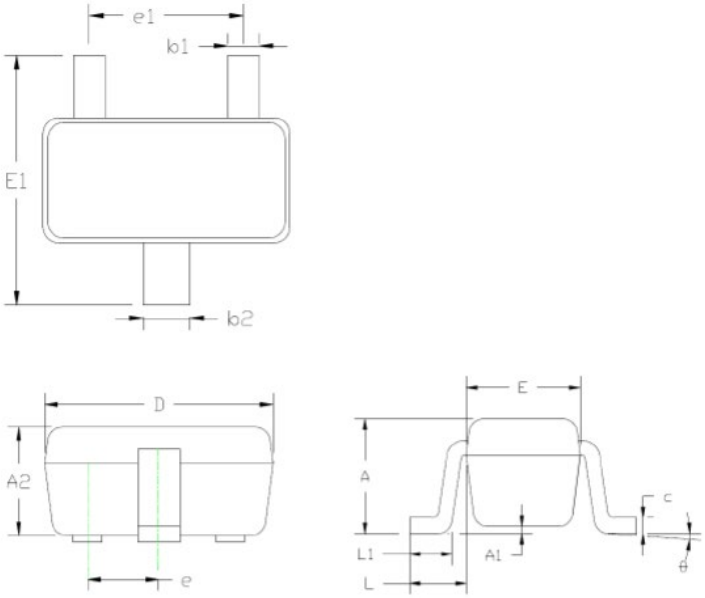
**Package Dimension:**

## SOT-523




| Dimensions | | | | |
|---|---|---|---|---|
| Symbol | Millimeters | | Inches | |
| | Min | Max | Min | Max |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.013 |
| c | 0.100 | 0.200 | 0.004 | 0.009 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.068 |
| e | 0.500 TYP | | 0.020 TYP | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0º | 8º | 0º | 8º |



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