# 2SK3065B

**60V, 39mΩ typ., 6A N-Channel MOSFET**

## General Description

The 2SK3065B uses advanced trench technology to provide excellent RDS(ON). This device is suitable for use as a Battery protection or in other Switching application.

## Product Summary

| BVDSS | $R_{DS(on)}$ max. | ID |
|---|---|---|
| 60V | 45mΩ | 6A |

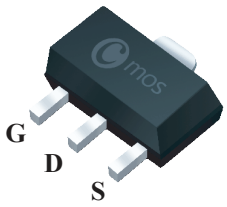
## Applications

- DC/DC Converter
- Battery Switch

## Features

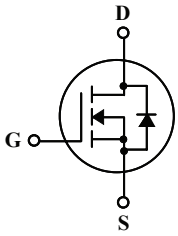
- RDS(ON)<45mΩ @ VGS=10V
- RDS(ON)<55mΩ @ VGS=4.5V
- Fast Switching
- RoHS Compliant

## SOT-89 Pin Configuration




SOT-89

2SK3065B




## Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 60 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Current | 6 | A |
| $I_{DM}$ | Pulsed Drain Current | 18 | A |
| $P_D$@$T_A$=25℃ | Total Power Dissipation | 1 | W |
| $T_{STG}$ | Storage Temperature Range | 150 | ℃ |
| $T_J$ | Operating Junction Temperature Range | -55 to 150 | ℃ |

## Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient | --- | 125 | ℃/W |

60V, 39mΩ typ., 6A N-Channel MOSFET

## Electrical Characteristics ($T_J$=25℃ , unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V , $I_D$=250uA | 60 | --- | --- | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=10V , $I_D$=5A | --- | 39 | 45 | mΩ |
| | | $V_{GS}$=4.5V , $I_D$=4.5A | --- | 44 | 55 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}$=$V_{DS}$ , $I_D$ =250uA | 1 | --- | 2.5 | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=48V , $V_{GS}$=0V , $T_J$=25℃ | --- | --- | 1 | uA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$ =±20V , $V_{DS}$=0V | --- | --- | ±100 | nA |
| gfs | Forward Transconductance | $V_{DS}$=5V , $I_D$ =3A | --- | 5 | --- | S |
| $R_g$ | Gate Resistance | $V_{DS}$=0V , $V_{GS}$=0V , f=1MHz | --- | 1.5 | --- | Ω |
| $Q_g$ | Total Gate Charge | $V_{DS}$=30V , $V_{GS}$=10V , $I_D$=6A | --- | 15 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 3.3 | --- | |
| $Q_{gd}$ | Gate-Drain Charge | | --- | 3.6 | --- | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DS}$=30V , $V_{GS}$ =10V , $R_G$=50Ω $I_D$=6A | --- | 10 | --- | ns |
| $T_r$ | Rise Time | | --- | 35 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | | --- | 60 | --- | |
| $T_f$ | Fall Time | | --- | 48 | --- | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=25V , $V_{GS}$=0V , f=1MHz | --- | 660 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 40 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 30 | --- | |

## Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V , $I_S$ =2A | --- | 0.79 | 1.2 | V |

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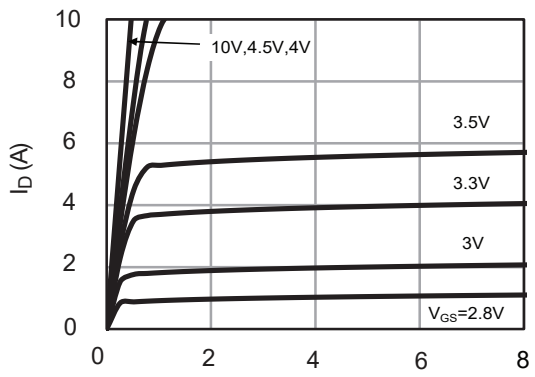
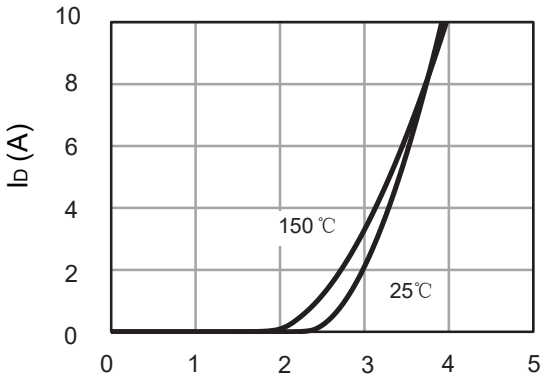
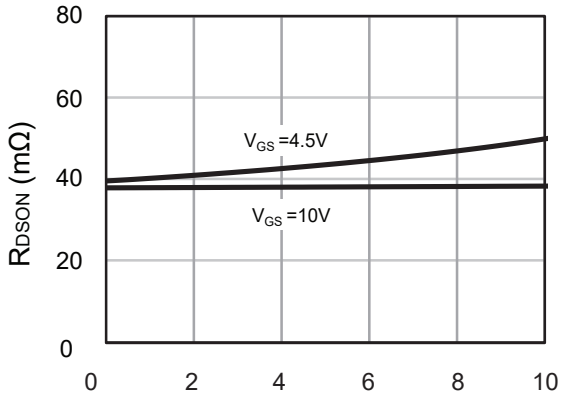
## Typical Characteristics



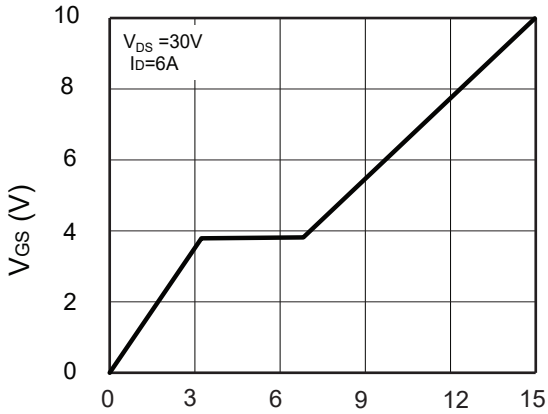

Output Characteristics



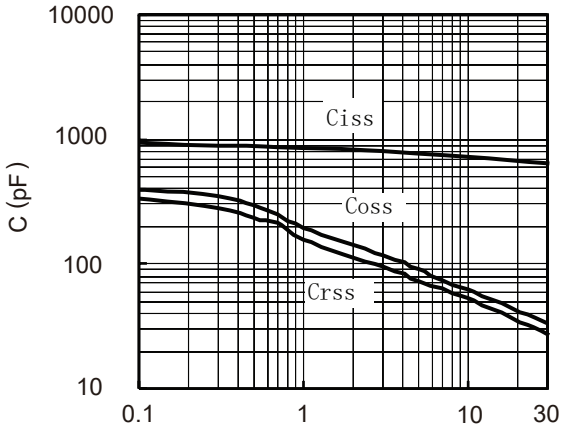

transfer characteristics



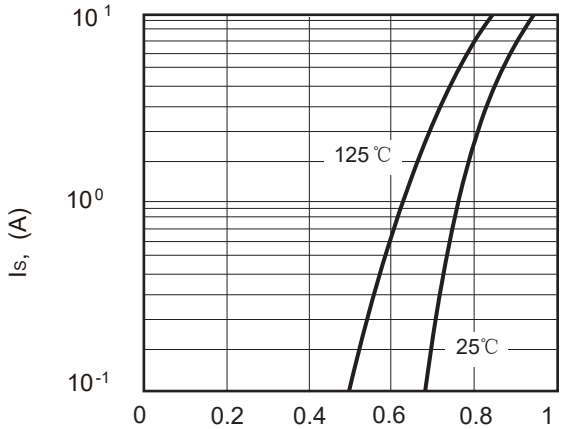

drain-source on-resistance




Gate charge vs gate-source voltage




Capacitance Characteristics




Body-Diode Characteristics