

60V P-CHANNEL MOSFET

Description

- Advanced trench cell design
- High Reliability Capability
- High speed switch

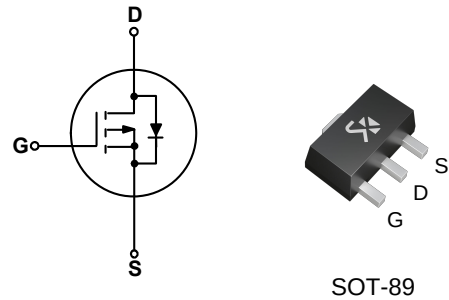
Features

- $BV_{DSS} \geq -60V$
- $I_D = -3A$
- $R_{DS(ON)} \leq 92m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} \leq 125m\Omega @ V_{GS} = -4.5V$

Applications

- Portable appliances
- Battery management
- Battery Switch

BV_{DSS}	$R_{DS(ON), typ.}$	I_D
-60V	73m Ω	-3A



SOT-89

Package No to Scale

Ordering Information

Part Number	Package
SK03P06L	SOT-89

Absolute Maximum Ratings

$T_A = 25^\circ C$ unless otherwise specified

Symbol	Parameter		SK03P06L	Unit
V_{DSS}	Drain-to-Source Voltage		-60	V
V_{GSS}	Gate-to-Source Voltage		± 20	V
I_D	Continuous Drain Current		-3	A
P_D	Power Dissipation [2]	$T_A = 25^\circ C$	1.25	W
T_J & T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ C$

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	SK03P06L	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	$^\circ C/W$

Electrical Characteristics

OFF Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	-60	--	--	V	$V_{GS}=0V, I_D=-250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	-1	μA	$V_{DS}=-48V, V_{GS}=0V$
		--	--	-30		$V_{DS}=-48V, V_{GS}=0V, T_J = 85^\circ\text{C}$
I_{GSS}	Gate-to-Source Leakage Current	--	--	+100	nA	$V_{GS}=+20V, V_{DS}=0V$
		--	--	-100		$V_{GS}=-20V, V_{DS}=0V$

ON Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	73	92	$m\Omega$	$V_{GS}=-10V, I_D=-2A$
		--	95	125	$m\Omega$	$V_{GS}=-4.5V, I_D=-1A$
$V_{GS(TH)}$	Gate Threshold Voltage	-1.3	-1.8	-2.5	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
gfs	Forward Transconductance	--	4	--	S	$V_{DS}=-5V, I_D=-1A$

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
R_g	Gate Resistance	--	5.0	--	Ω	
C_{iss}	Input Capacitance	--	910	--	pF	$V_{GS}=0V, V_{DS}=-30V, f=1MHz$
C_{rss}	Reverse Transfer Capacitance	--	35	--		
C_{oss}	Output Capacitance	--	43	--		
Q_g	Total Gate Charge	--	14	--	nC	$V_{DS}=-30V, I_D=-3.5A, V_{GS}=-10V$
Q_{gs}	Gate-to-Source Charge	--	3	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	3	--		

Source-Drain Body Diode Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	-0.8	-1.3	V	$I_S=-2A, V_{GS}=0V$

Note: [1]Current maybe limit by junction temperature.
[2]The power dissipation is limited by 150°C junction temperature.

Typical Characteristics

Figure 1. On-Region Characteristics

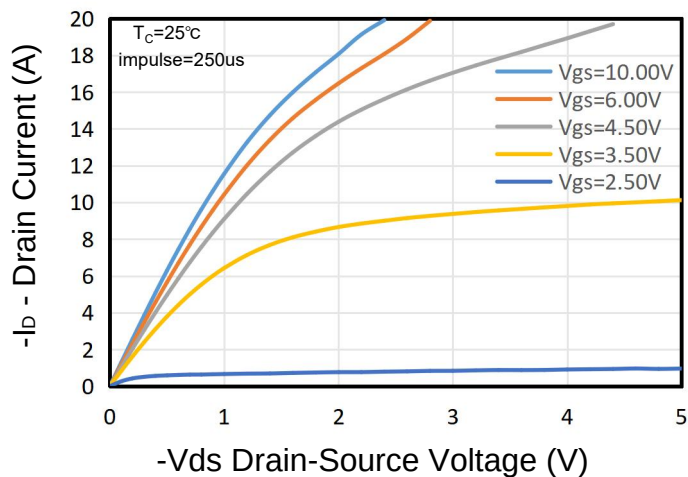


Figure 2. Transfer Characteristics

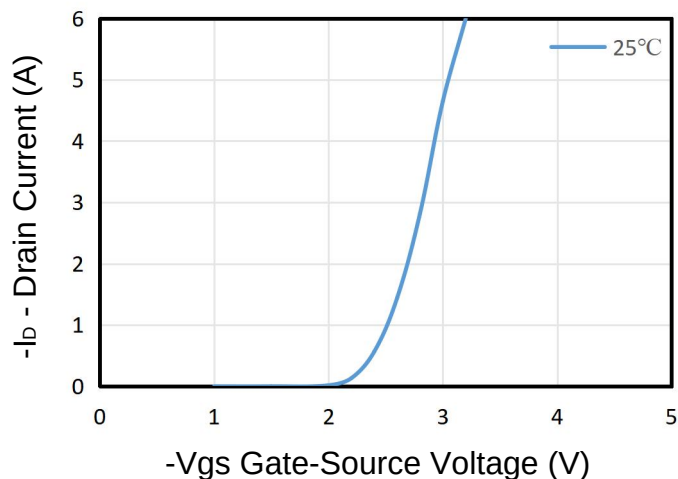


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

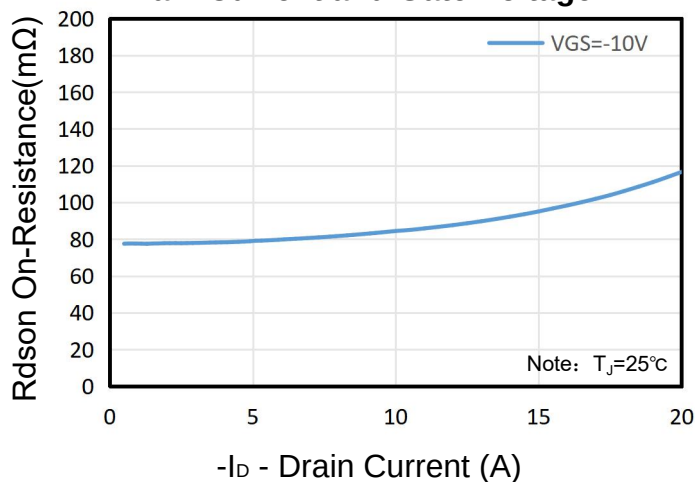


Figure 4. Body Diode Forward Voltage Variation with Source Current

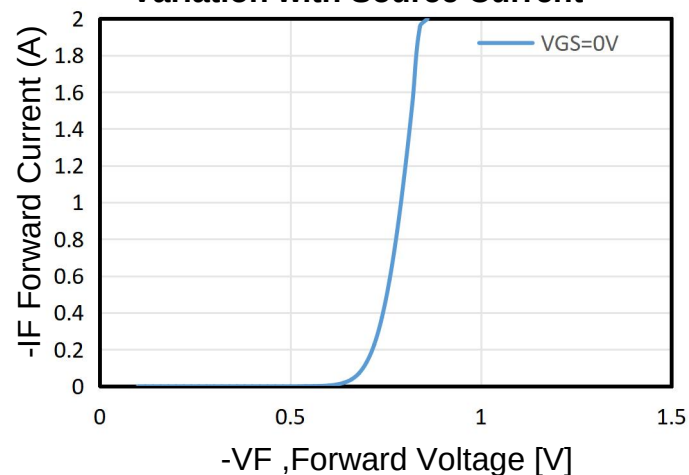


Figure 5. Capacitance Characteristics

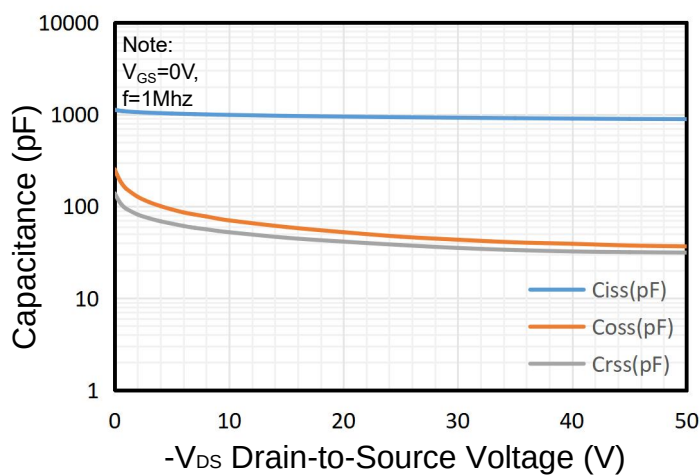
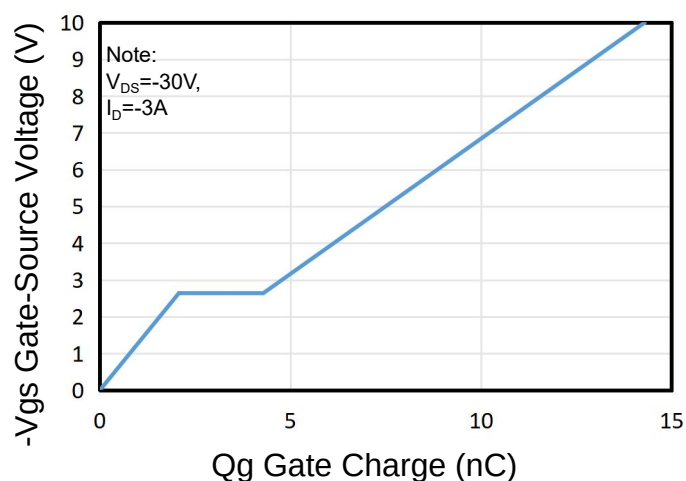


Figure 6. Gate Charge Characteristics



Typical Characteristics

Figure 7. Vds Drain-Source Voltage
vs Gate Voltage

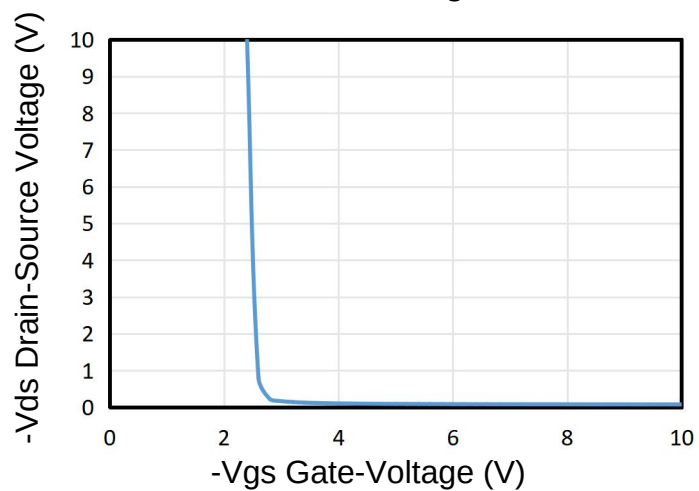
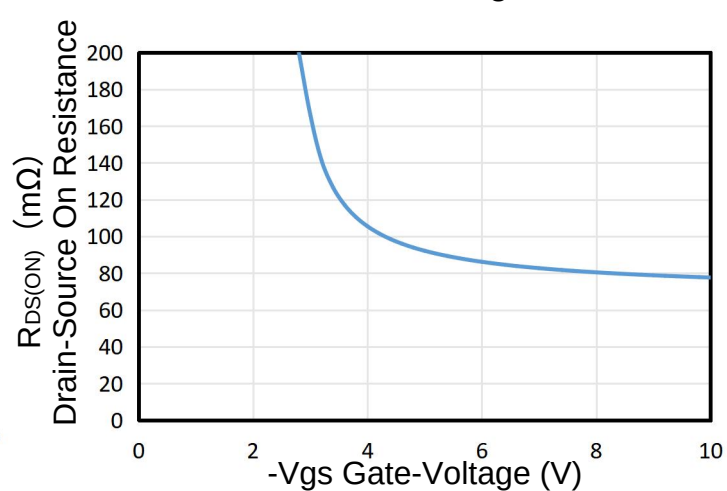
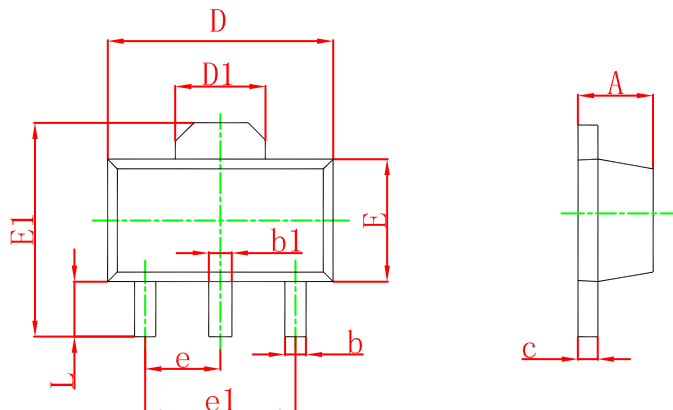


Figure 8. On-Resistance
vs Gate Voltage



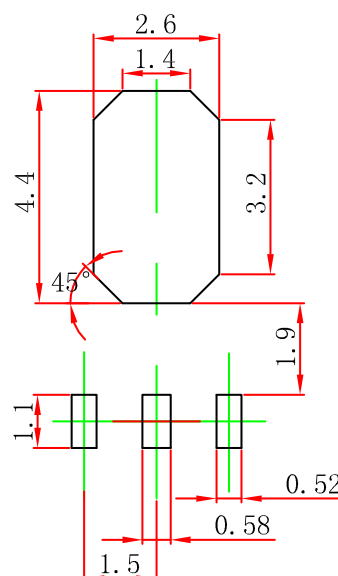
Package Outline

SOT-89



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.