SK03N06L

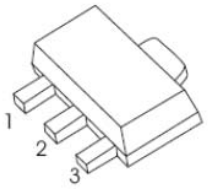
Power MOSFET Wafer (N-Type 60 V)

● Features

Advanced trench cell design
Extremely low threshold voltage

BV≧60 V	$R_{DS(ON)}$ ≦ 75 mΩ@ VGS= 10 V
P_{tot}≦1.4W	$R_{DS(ON)}$ ≦ 82 mΩ@ VGS= 5 V
I_D ≦3.5A	$R_{DS(ON)}$ ≦ 90 mΩ@ VGS= 4.5 V

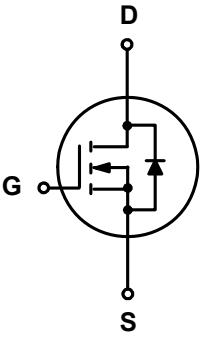
Simplified Outline



SOT-89

1. GATE 2. DRAIN 3. SOURCE

Symbol



● Applications

Portable appliances
High speed switch
Battery management

● Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A = 25 ℃	60	-	V
V_{GS}	Gate-Source Voltage	T_A = 25 ℃	-	± 20	V
I_D*	Drain Current (DC)	T_A = 25 ℃, V_{GS} = 10 V	-	3.5	A
		T_A = 100 ℃, V_{GS} = 10 V	-	2.2	A
I_{DM}*,**	Drain Current (Pulsed)	T_A = 25 ℃, V_{GS} = 10 V	-	14	A
P_{tot}*	Total Power Dissipation	T_A = 25 ℃	-	1.4	W
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		- 55	150	℃
I_S	Diode Forward Current	T_A = 25 ℃	-	3.5	A

Notes :
* Surface Mounted on 1 in^2 pad area, t ≤ 10 sec
** Pulse width ≤ 300 μs, duty cycle ≤ 2 %

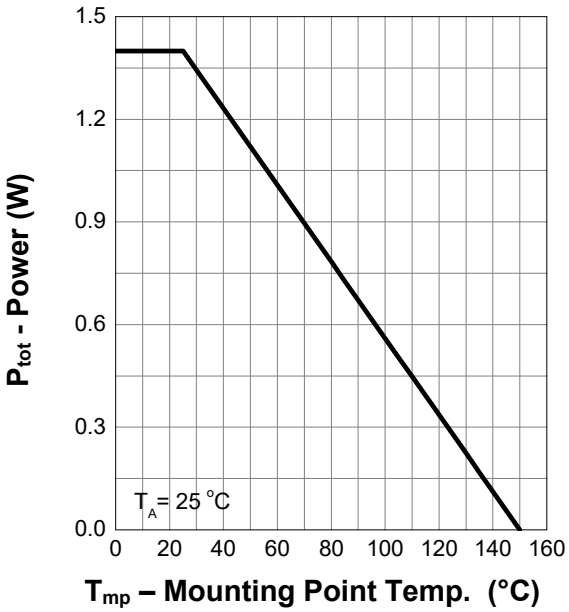
● Electrical Characteristics (Ta = 25 ºC Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 µA	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 µA	1	-	2	V
I_{DSS}	Drain Leakage Current	V_{DS} = 48 V, V_{GS} = 0 V	-	-	1	µA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	-	-	± 100	nA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 10 V, I_{DS} = 2 A	-	60.6	72.8	mΩ
		V_{GS} = 4.5 V, I_{DS} = 1 A	-	69.2	90	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 2 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD} = 2 A, dI_{SD} / dt = 100 A / µs	-	9	-	nS
Q_{rr}	Reverse Recovery Charge		-	5.1	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 30 V Frequency = 1 MHz	-	498	-	pF
C_{oss}	Output Capacitance		-	25	-	
C_{rss}	Reverse Transfer Capacitance		-	21	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 30 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 15 Ω, I_{DS} = 2 A	-	4.3	-	nS
t_r	Turn-on Rise Time		-	2.7	-	
t_d(off)	Turn-off Delay Time		-	14	-	
t_f	Turn-off Fall Time		-	5.7	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{GS} = 10 V, V_{DS} = 30 V, I_{DS} = 2 A	-	9.5	-	nC
Q_{gs}	Gate-Source Charge		-	2.2	-	
Q_{gd}	Gate-Drain Charge		-	1.1	-	

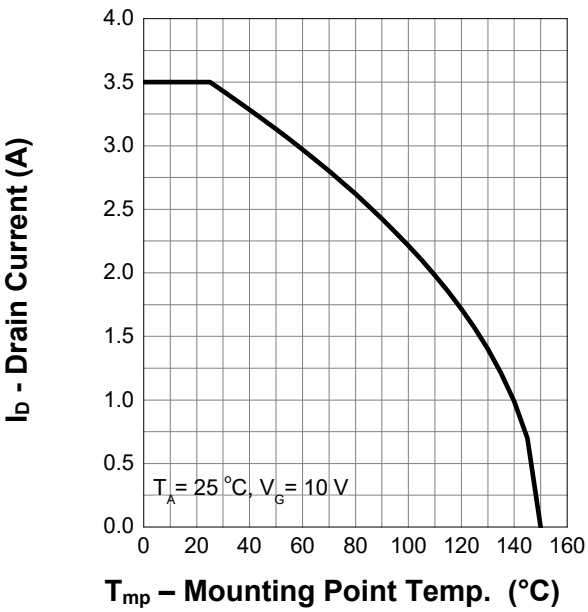
Notes : a : Pulse test ; pulse width ≤ 300 µs, duty cycle ≤ 2 %
b : Guaranteed by design, not subject to production testing

Typical Characteristics

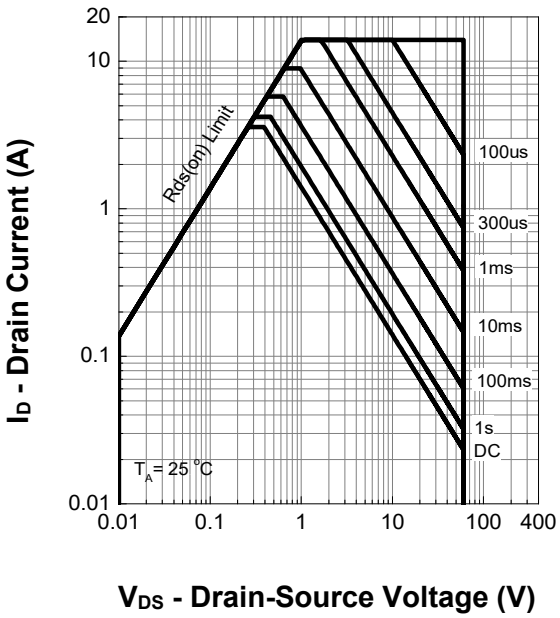
Power Capability



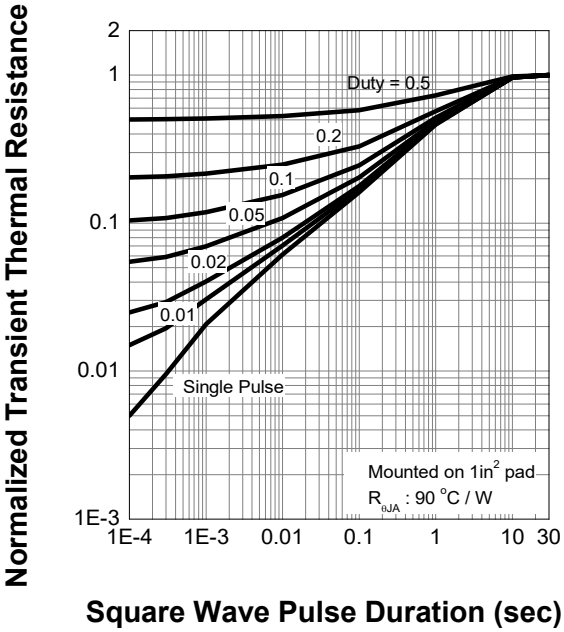
Current Capability



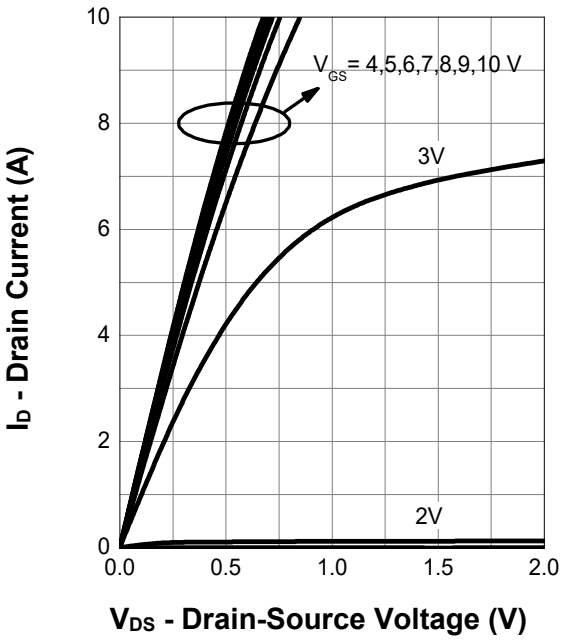
Operating



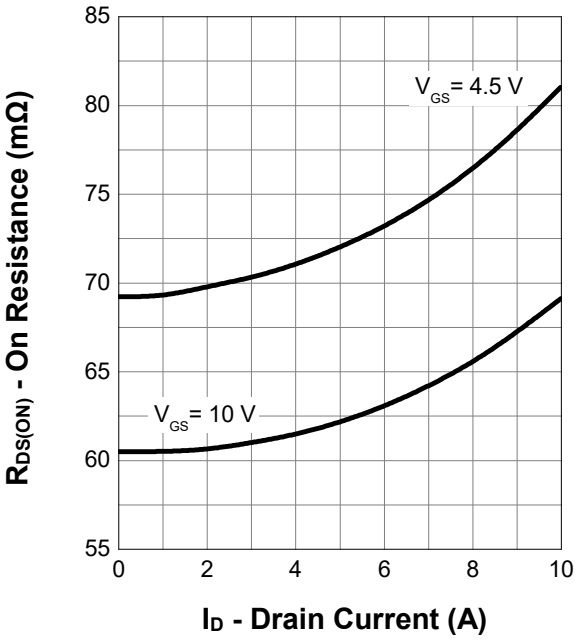
Transient Thermal Impedance



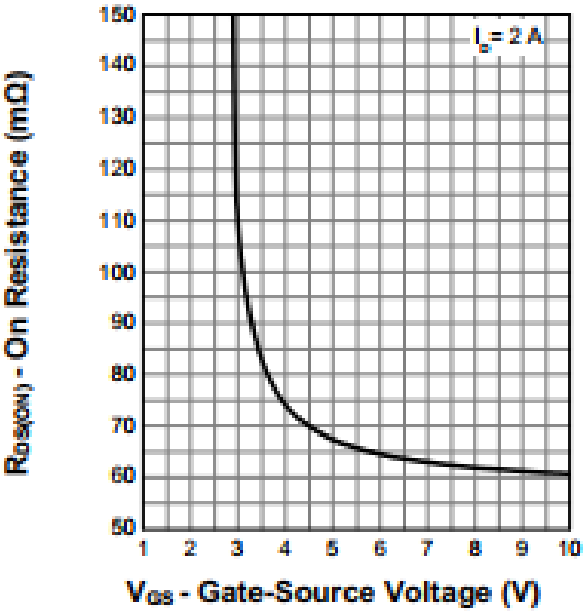
Output Characteristics



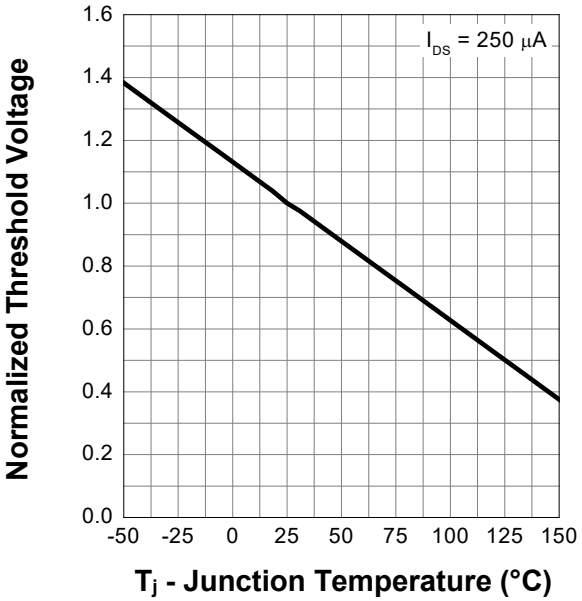
On Resistance



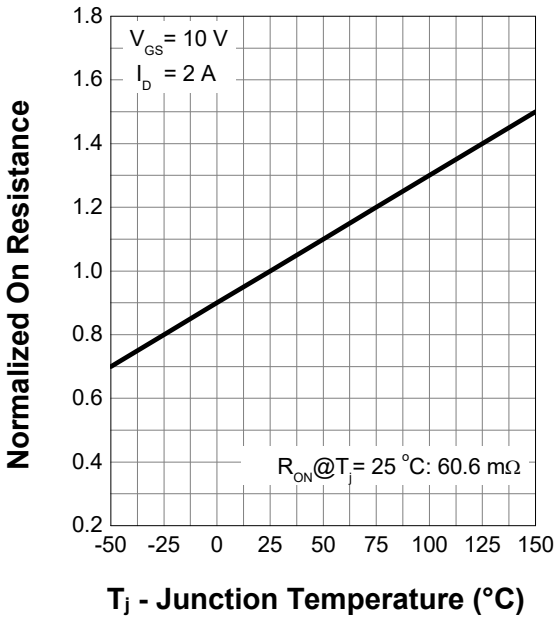
Transfer Characteristics



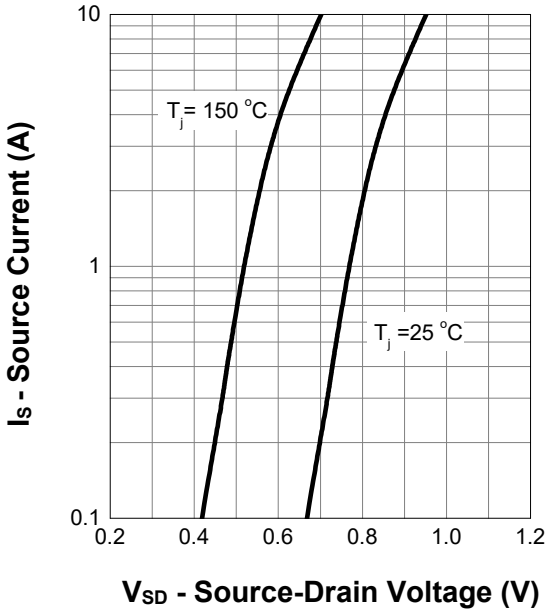
Normalized Threshold Voltage



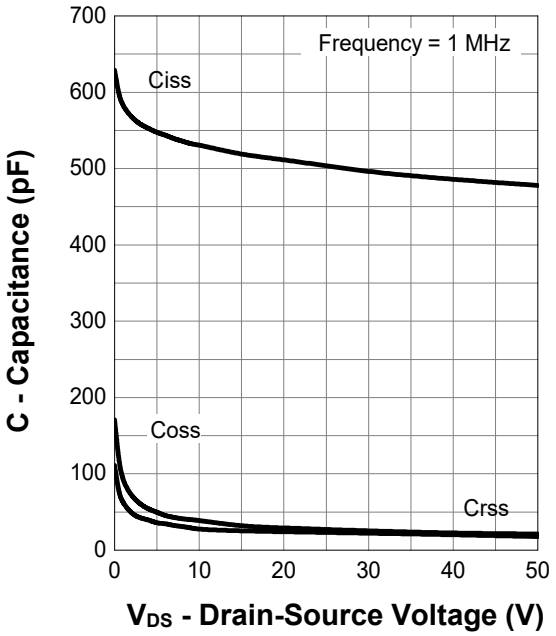
Normalized On Resistance



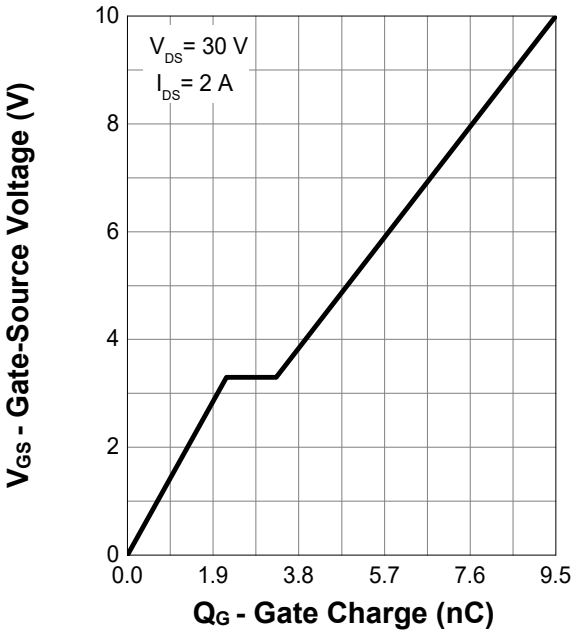
Diode Forward Current



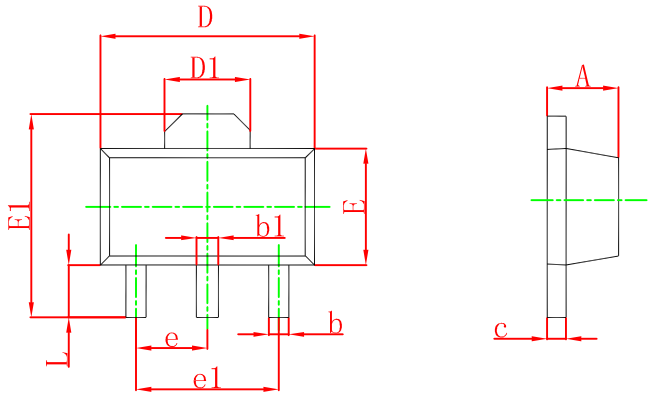
Capacitance



Gate Charge

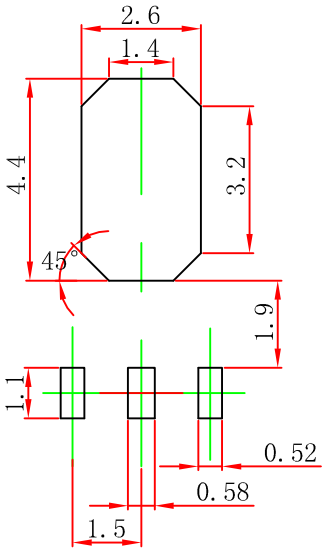


SOT-89 Package Outline Dimensions



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

SOT-89 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.