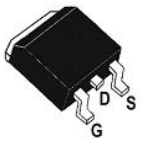
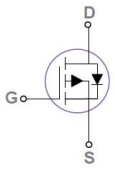
MOSFET Metal-Oxide-Semiconductor Field-Effect Transistor

60V N-Channel MOSFET

General Description

The SK35N06D uses advanced Trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

Product Summary			TO-252-2L
BV_{DSS}	60	V	
$R_{DS(ON)}$ @V_{GS}=10V	20(Max.)	mΩ	
$R_{DS(ON)}$ @V_{GS}=4.5V	24(Max.)	mΩ	
I_D	35	A	

Features	Applications	Graphic Symbol
• Low On-Resistance • Low Input Capacitance • Low Miller Charge • Low Input / Output Leakage	• Lithium-Ion Secondary Batteries • Load Switch • DC-DC converters and Off-line UPS	

Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60V	V
Gate-Source Voltage		V_{GSS}	±20V	V
Drain Current-Continuous	T_C=25℃[1]	I_D	35	A
	T_C=100℃[1]		22	
Drain Current-Pulsed [2]		I_{DM}	80	A
Avalanche Current, L=0.1mH		I_{AS}	28	A
Avalanche Energy, L=0.1mH [3]		E_{AS}	39.2	mJ
TOTAL Power Dissipation @ T_C=25℃[4]		P_D	45	W
TOTAL Power Dissipation @ T_A=25℃[4]			2	W
Storage Temperature Range		T_{STG}	-55 to 150°C	°C
Operating Junction Temperature Range		T_J	-55 to 150°C	°C

Parameter	Symbol	Conditions	Min.	Typ	Max	Unit
Maximum Junction-to-Ambient [1]	$R_{\theta JA}$	Steady State	-	-	62	°C/W
Maximum Junction-to-Case [1]	$R_{\theta JC}$	Steady State	-	-	2.8	°C/W

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_{DS}=250uA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	-	-	±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_{DS}=250uA	1.2	-	2.5	V
Drain-Source On-Resistance [2]	$R_{DS(ON)}$	V_{GS}=10V , I_{DS}=20A	-	-	20	mΩ
		V_{GS}=4.5V , I_{DS}=10A	-	-	24	
Forward Transconductance	gfs	V_{DS}=5V, I_D=15A	-	45	-	S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	2430	-	pF
Output Capacitance	C_{oss}		-	148	-	
Reverse Transfer Capacitance	C_{rss}		-	100	-	
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	1.8	-	Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=30V, V_{GS}=10V, I_D=15A , R_{GEM}=3.3Ω	-	7.8	-	ns
Rise Time	t_r		-	52	-	
Turn-Off Delay Time	$T_{d(off)}$		-	37	-	
Fall Time	t_f		-	7.2	-	
Total Gate Charge	Q_g	V_{DS}=48V, I_{DS}=15A, V_{GS}=4.5V	-	19.8	-	nC
Gate to Source Gate Charge	Q_{gs}		-	7.5	-	
Gate to Drain Charge	Q_{gd}		-	8.0	-	
SWITCHING CHARACTERISTICS						
Continuous Source Current [1, 5]	I_S	V_G=V_D=0V , Force Current	-	-	35	A
Pulsed Source Current [2, 5]	I_{SM}		-	-	80	A
Drain-Source Diode Forward Voltage [2]	V_{SD}	V_{GS}=0V, I_S=1A	-	-	1.2	V

Notes:

1. **The data tested by surface mounted on a 1 inch$_2$ FR-4 board with 2OZ copper.**
2. **The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%**
3. **The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=28A**
4. **The power dissipation is limited by 150℃ junction temperature**
5. **The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.**

Typical Operating Characteristics

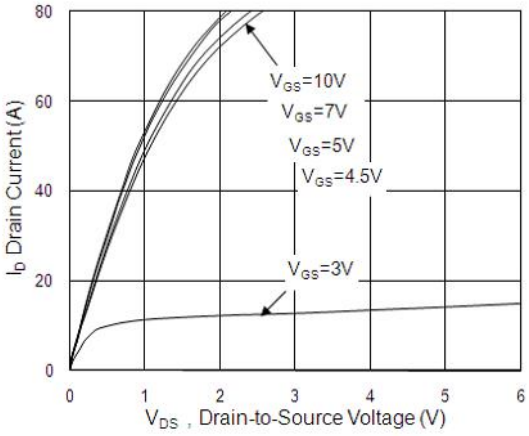


Fig.1 Typical Output Characteristics

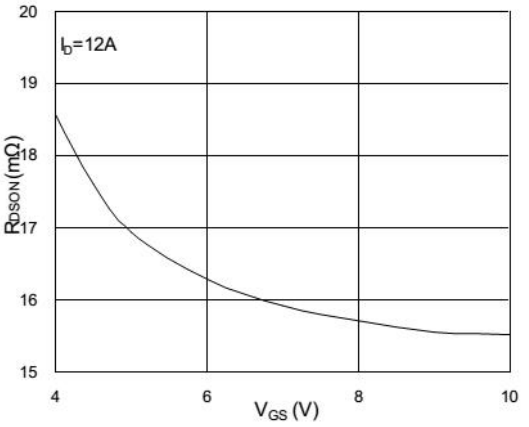


Fig.2 On-Resistance v.s Gate-Source

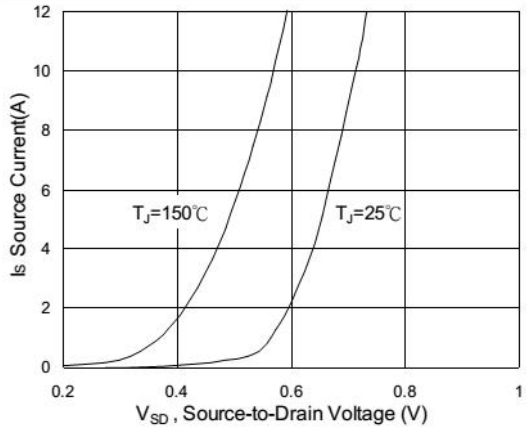


Fig.3 Forward Characteristics of Reverse

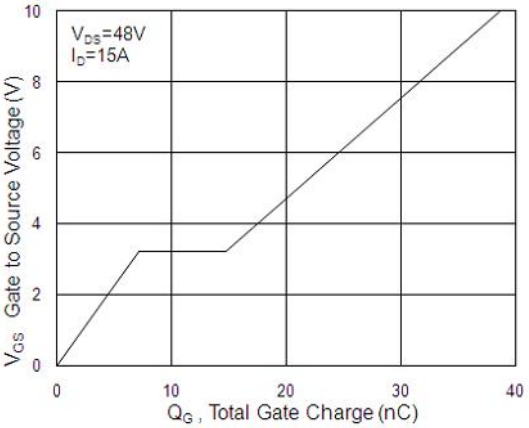


Fig.4 Gate-Charge Characteristics

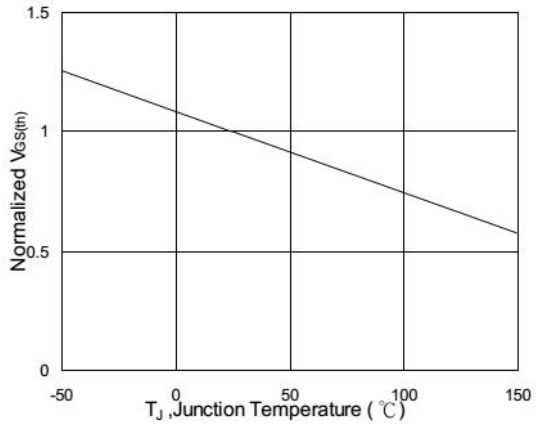


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

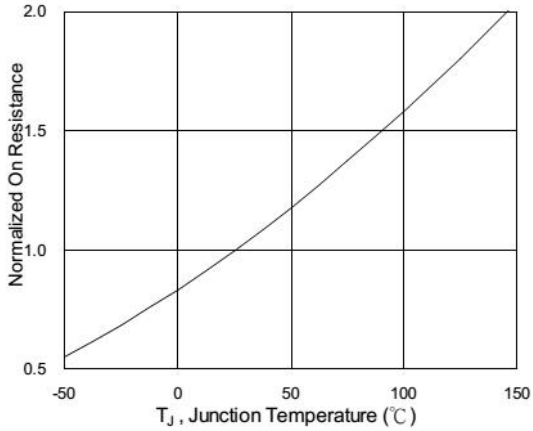


Fig.6 Normalized R_{DSON} v.s T_J

Typical Operating Characteristics (Cont.)

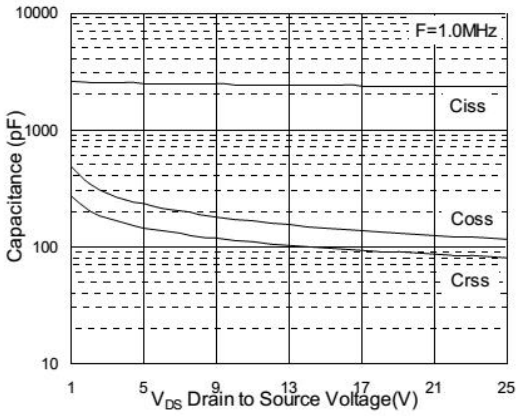


Fig.7 Capacitance

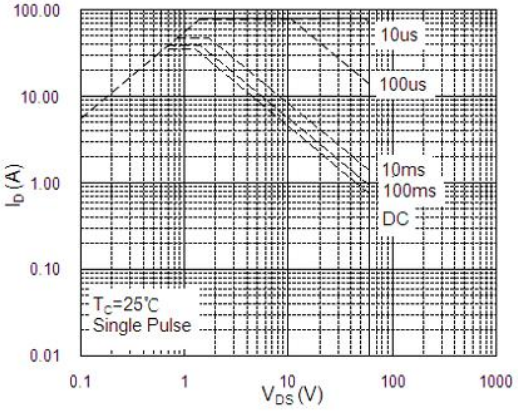


Fig.8 Safe Operating Area

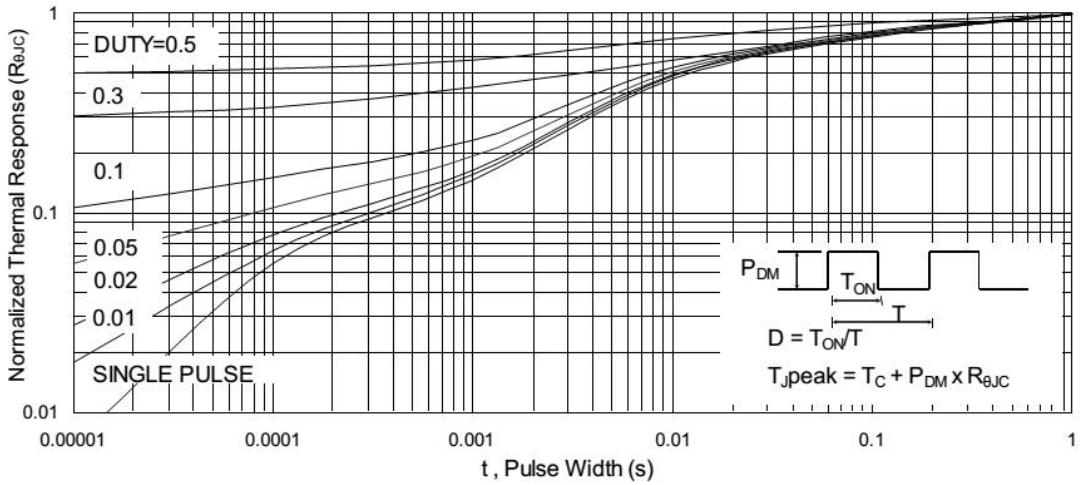


Fig.9 Normalized Maximum Transient Thermal Impedance

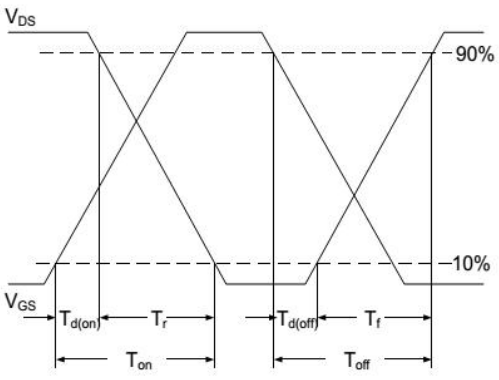


Fig.10 Switching Time Waveform

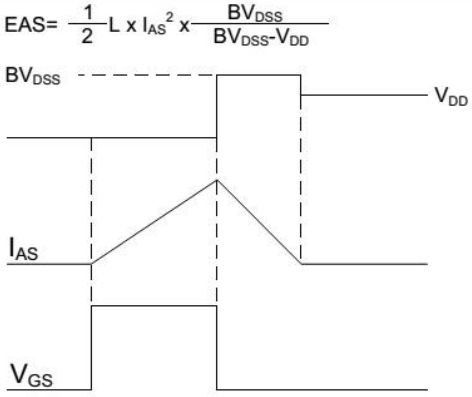
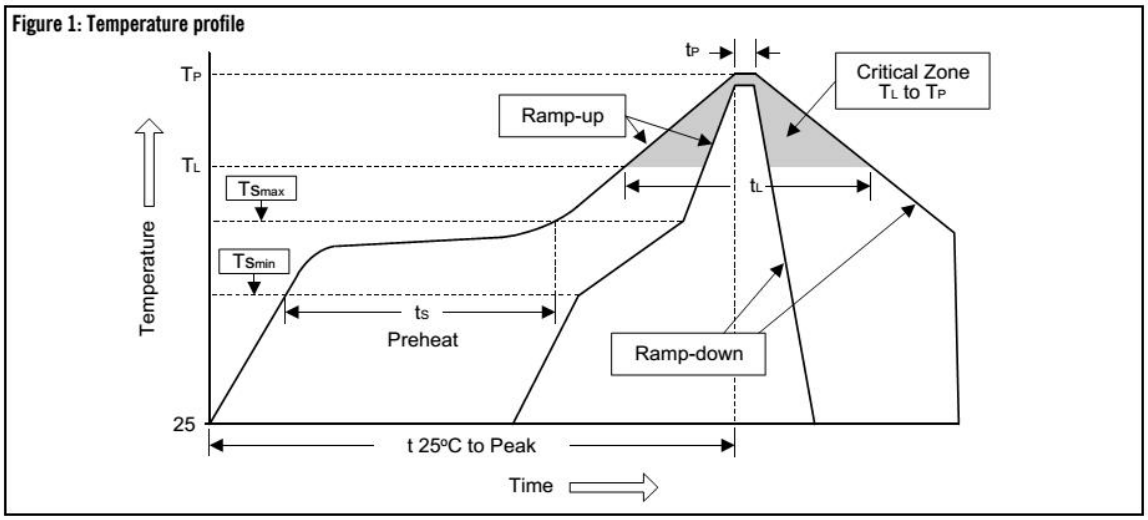


Fig.11 Unclamped Inductive Switching Waveform

Soldering Methods for SK Product

1. Storage environment: Temperature=10˚C to35˚C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

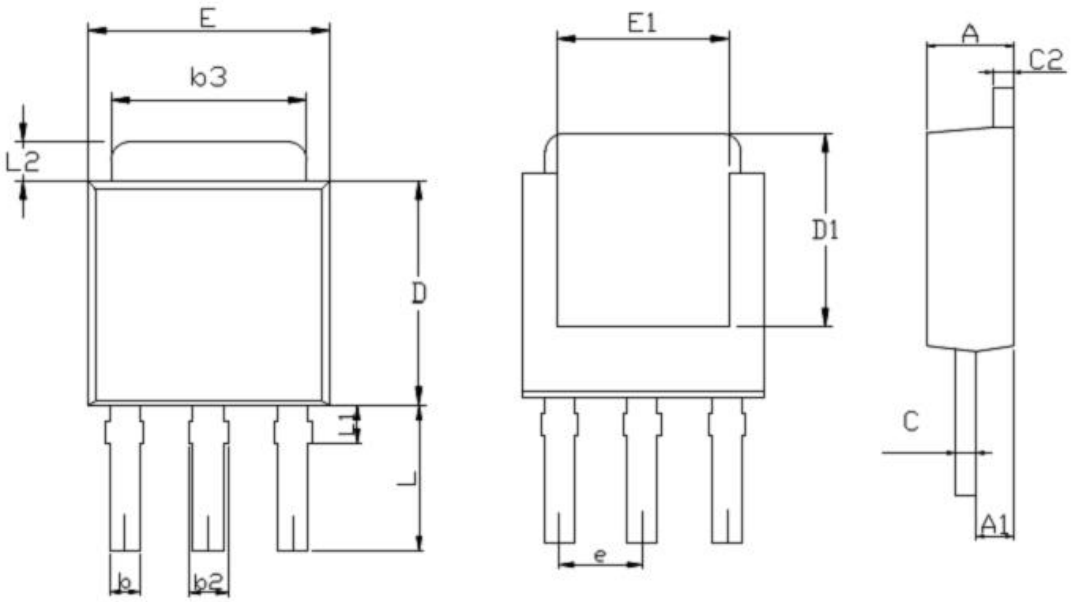


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60 to 120 sec	 150°C 200°C 60 to 180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60 to 150 sec	 217°C 60 to 150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec

PACKAGE DIMENSION



Symbol	TO-252-2L			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.184	2.338	0.086	0.094
A1	0.890	1.143	0.035	0.045
b	0.635	0.890	0.025	0.035
b2	0.910	1.143	0.035	0.045
b3	4.953	5.460	0.195	0.215
c	0.457	0.610	0.018	0.024
c1	0.457	0.890	0.018	0.035
D	5.334	6.223	0.210	0.245
D1	5.207		0.205	
E	6.350	6.730	0.250	0.265
E1	4.320		0.170	
e	2.29 BSC		0.090 BSC	
L	3.700	4.400	0.146	0.173
L1	0.850	1.250	0.033	0.049
L2	0.890	1.270	0.035	0.050

单击下面可查看定价，库存，交付和生命周期等信息

>>SHIKUES(时科)