MSK19N03

N-Channel 30-V (D-S) MOSFET

Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low RDS(on) and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, and PCMCIA cards, cellular and cordless telephones.

Features

• Low rDS(on) provides higher efficiency and extends battery life

• Low thermal impedance copper lead frame DFN3x3 saves board space

• Fast switching speed

• High performance trench technology

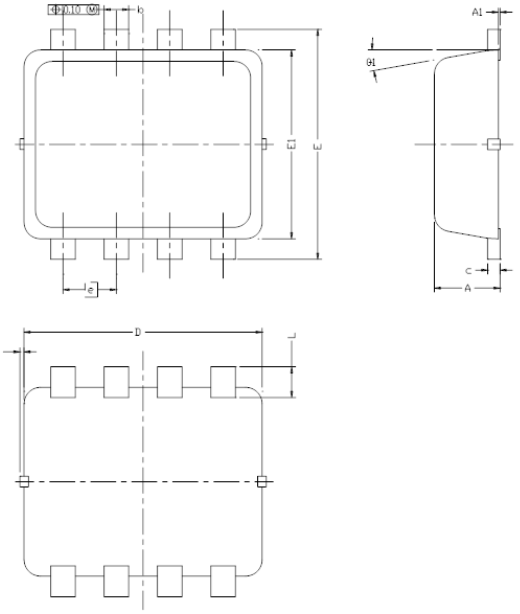
• RoHS compliant package

Package type：DFN 3X3

Packing & Order Information

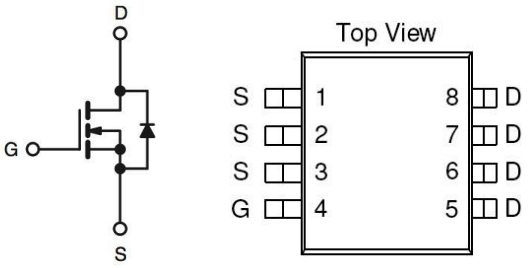
3,000/Reel

RoHS COMPLIANT



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.800	0.900	0.028	0.0315	0.0354
A1	0.000	-	0.050	0.000	-	0.002
b	0.240	0.300	0.350	0.009	0.012	0.014
c	0.080	0.152	0.250	0.003	0.006	0.010
DIM.	2.90 BSC			0.114 BSC		
E	2.80 BSC			0.110 BSC		
E1	2.30 BSC			0.091 BSC		
e	0.65 BSC			0.026 BSC		
L	0.200	0.375	0.450	0.008	0.0148	0.0177
L1	0.000	-	0.100	0.000	-	0.004
θ1	0.000	10.000	12.000	0.000	10.000	12.000

Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current -Continuous[a] (T_A =25°C)	±19	A
	Drain Current -Continuous[a] (T_A =70°C)	±16	A
I_{DM}	Pulsed Drain Current[b]	±40	A
P_D	Total Power Dissipation[a] (T_A=25°C)	3.5	W
	Total Power Dissipation[a] (T_A=70°C)	2	W

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Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)			
Symbol	Parameter	Value	Unit
Is	Continuous Source Current (Diode Conduction)[a]	2	A
T_J,T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C

Thermal Data			
Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Maximum Junction-to-Case[a] (t<=5 sec)	35	°C/W
$R_{\theta JA}$	Maximum Junction-to- Ambient[a] (t<=5 sec)	50	

Note:

1. Surface Mounted on 1“x1” FR4 Board.
2. Pulse width limited by maximum junction temperature.

Static					
Symbol	Test Conditions	Min	Typ.	Max.	Units
V_{SD}	V_{GS} = 0 V , I_S = 2.3 A	--	0.7	--	V
$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	1	--	3	V
I_{DSS}	V_{DS} = 24 V , V_{GS} = 0 V V_{DS} = 24 V , V_{GS} = 0 V , T_j= 55°C	--	--	1 25	uA
I_{GSS}	V_{GS} = 20 V , V_{DS} = 0	--	--	±100	nA
$I_{D(ON)}$	V_{DS} = 5 V , V_{GS} = 10 V	20	--	--	A
$R_{DS(ON)}$	V_{GS} = 10 V,I_D = 10 A V_{GS} = 4.5 V,I_D = 8 A	--	--	6.9 9.8	mΩ
G_{FS}*1	V_{DS} = 15 V,I_D = 10 A		40		S

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
C_{ISS}	Input Capacitance	V_{DS} = 15 V, V_{GS} = 0 V, f = 1.0MHz	--	1302	--	pF
C_{OSS}	Output Capacitance		--	423	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	171	--	pF
Q_g	Total Gate Charge	V_{DS} = 15 V , I_D = 10 A, V_{GS} = 4.5 V	--	11	--	nC
Q_{gs}	Gate-Source Charge		--	6	--	nC
Q_{gd}	Gate-Drain Charge		--	4	--	nC
$t_{d(on)}$	Turn-On Dalay Time	V_{DD} = 25 V , I_D = 1 A, R_L = 25 Ω, V_{GEN} = 10 V	--	10	--	ns
t_r	Rise Time		--	5	--	ns
$t_{d(off)}$	Turn-Off Dalay Time		--	22	--	ns
tf	Fall Time		--	4	--	ns

Notes

a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing.

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■Characteristics Curve

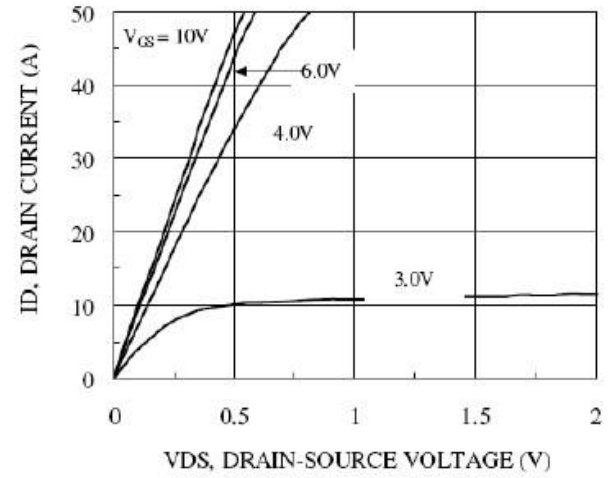

FIG.1-ON REGION CHARACTERISTICS

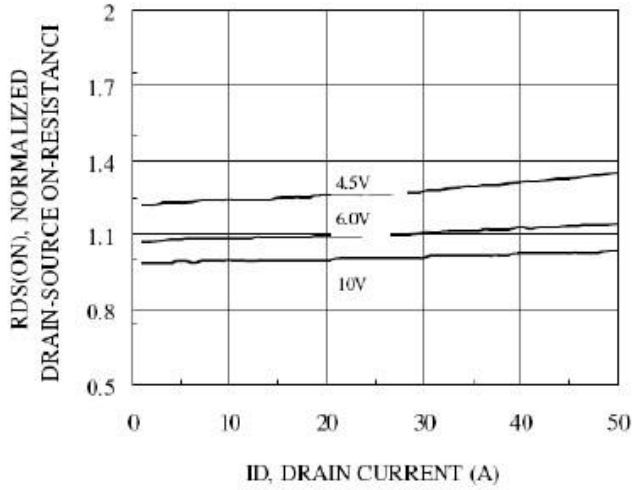

FIG.2-TRANSFER CHARACTERISTICS

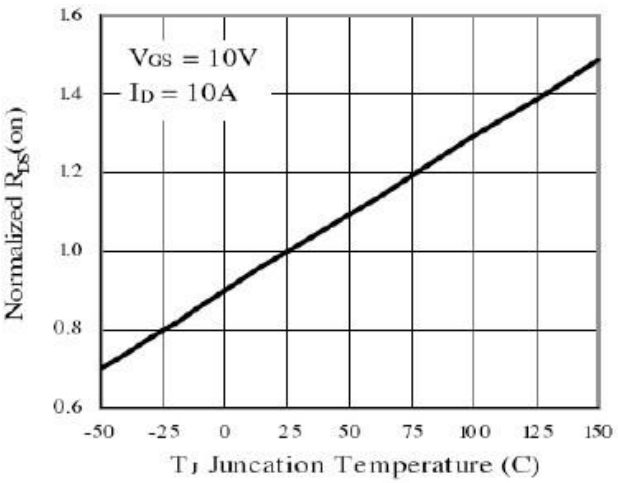

FIG.3-ON RESISTANCE VARIATION VS DRAIN CURRENT AND GATE VOLTAGE

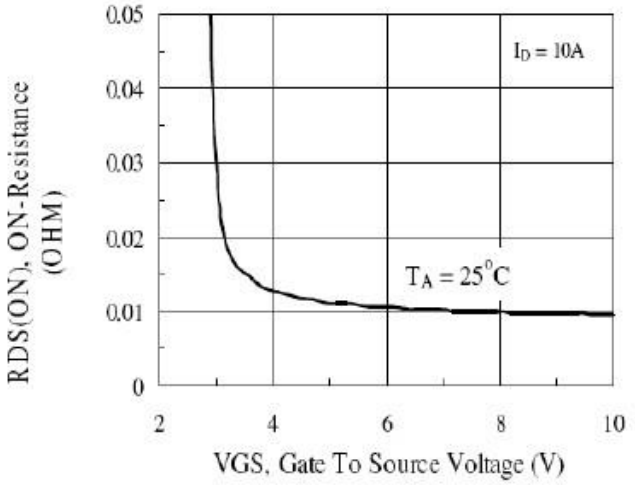

FIG.4-BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE

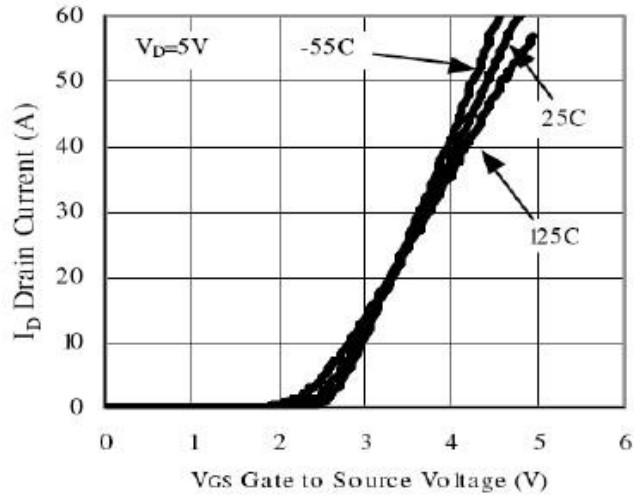

FIG.5-CAPACITANCE CHARACTERISTICS

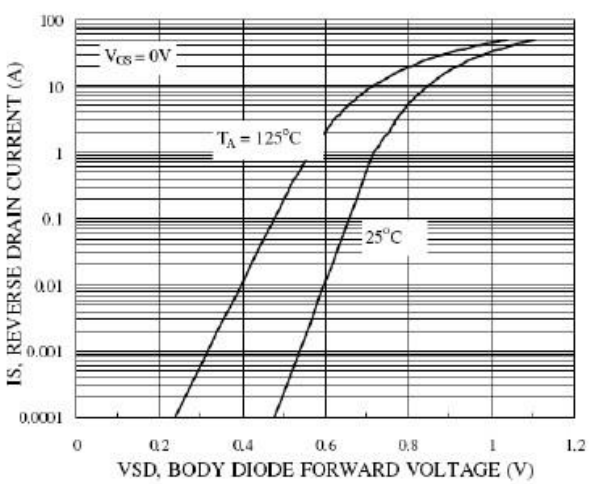

FIG.6-GATE CHARGE CHARACTERISTICS

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■Characteristics Curve

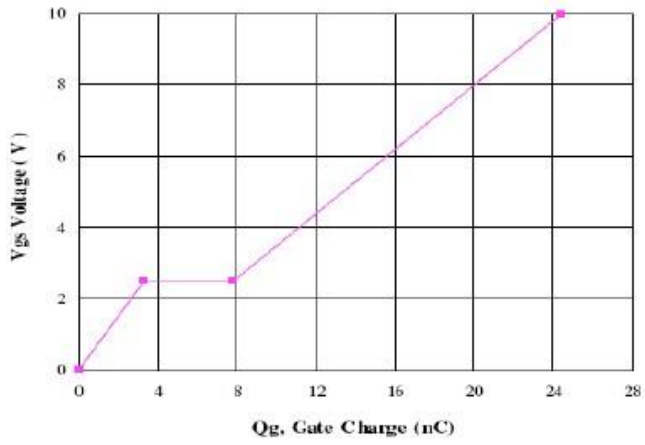

FIG.7-BREAKDOWN VOLTAGE VARIATION VS TEMPERATURE

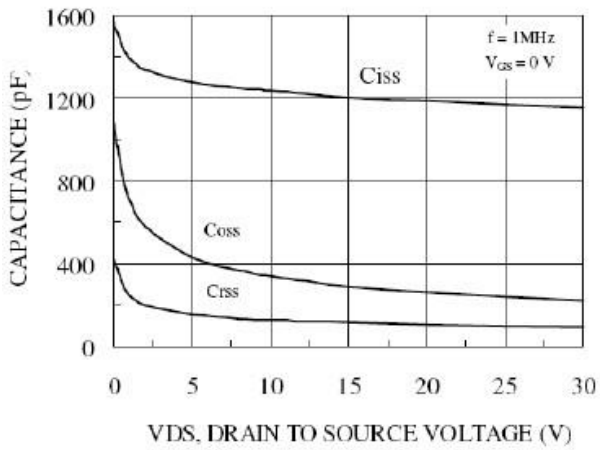

FIG.8-ON-RESISTANCE VARIATION VS TEMPERATURE

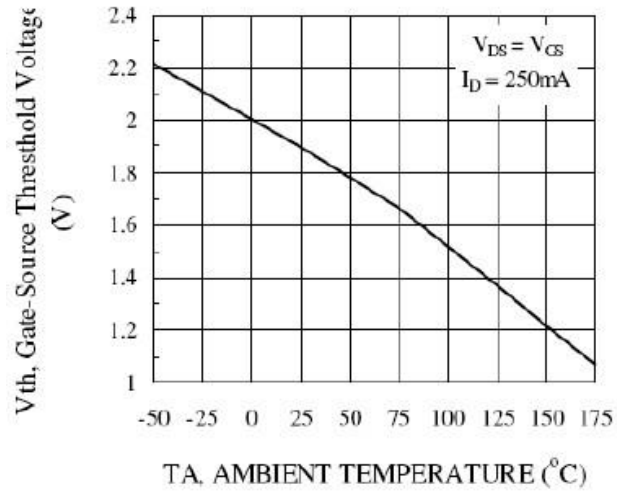

FIG.9-MAXIMUM SAFE OPERATING AREA

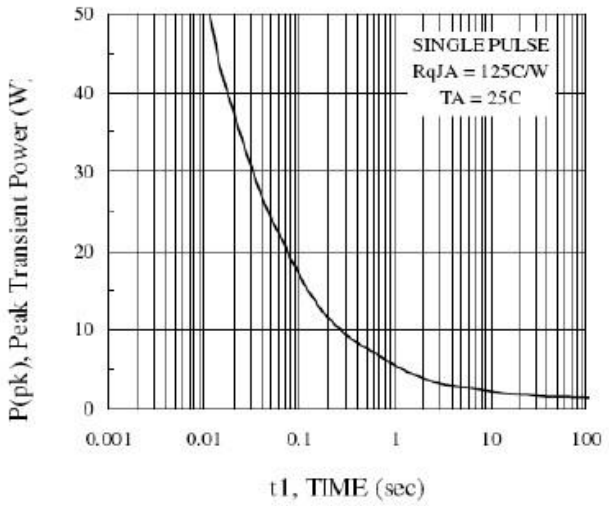

FIG.10-MAXIMUM DRAIN CURRENT VS CASE TEMPERATURE

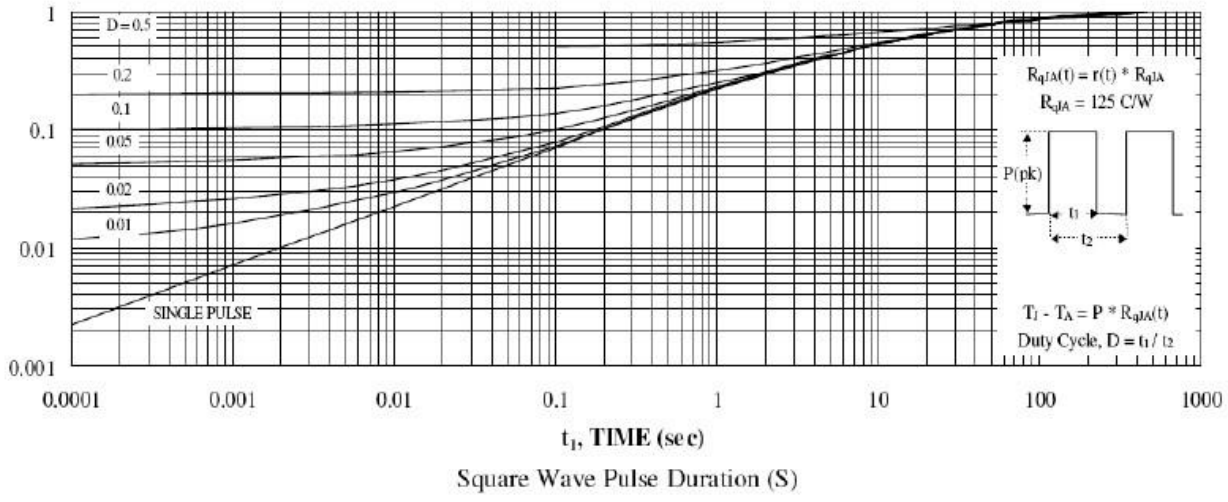

FIG.11-TRANSIENT THERMAL RESPONSE CURVE

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