

# MSQ99N26

## Dual N-Channel 20-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, PCMCIA cards, cellular and cordless telephones.

### Features

- Low RDS(on) provides higher efficiency and Extends battery life
- Low thermal impedance copper lead frame
- SOIC-8PP saves board space
- Fast switching speed
- High performance trench technology
- RoHS compliant package

### Packing & Order Information

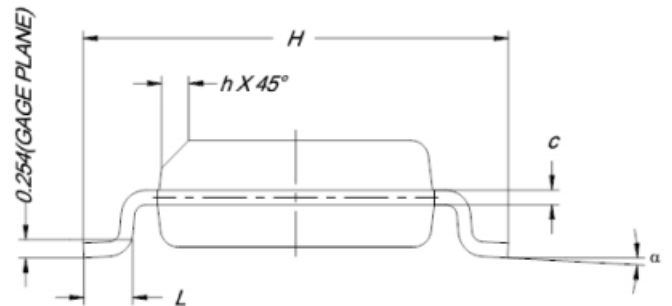
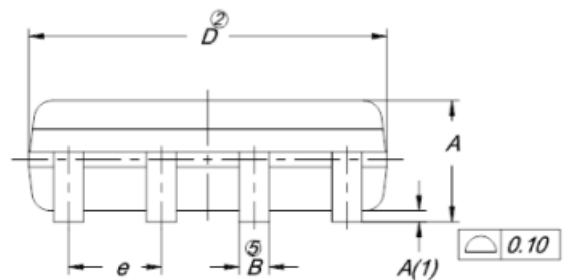
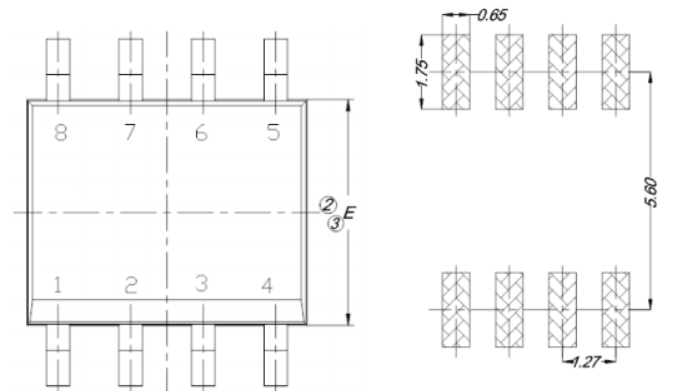
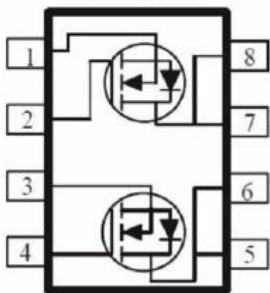
3,000/Reel



**RoHS  
COMPLIANT**

### Graphic symbol

SO-8 Package



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	1.35	1.55	1.75
A(1)	0.10	0.18	0.25
B	0.38	0.45	0.51
C	0.19	0.22	0.25
D	4.80	4.90	5.00
E	3.80	3.90	4.00
e	1.27 BSC		
H	5.80	6.00	6.20
L	0.50	0.72	0.93
α	0°	4°	8°
h	0.25	0.38	0.50

## MSQ99N26

### Dual N-Channel 20-V (D-S) MOSFET

#### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

##### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current -Continuous ( $T_C=25^\circ\text{C}$ )	6	A
	Drain Current -Continuous ( $T_C=70^\circ\text{C}$ )	5	A
$I_{DM}$	Drain Current Pulsed	$\pm 30$	A
$I_S$	Continuous Source Current (Diode Conduction)	1.7	A
$P_D$	Power Dissipation ( $T_C=25^\circ\text{C}$ )	2.1	W
	Power Dissipation ( $T_C=70^\circ\text{C}$ )	1.3	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

##### Thermal Resistance Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient <sup>a</sup> ( $t \leq 10$ sec)	62.5	$^\circ\text{C/W}$
	Maximum Junction-to-Ambient <sup>a</sup> (Steady State)	80	

##### Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

##### Static Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
$V_{GS}$	$V_{GS} = V_{DS}$ , $I_D = 250\mu\text{A}$	0.7	--	--	V
$r_{DS(on)}$	$V_{GS} = 4.5\text{ V}$ , $I_D = 6\text{ A}$	--	--	30	m $\Omega$
	$V_{GS} = 2.5\text{ V}$ , $I_D = 5\text{ A}$	--	--	40	
$I_{DSS}$	$V_{DS} = 16\text{ V}$ , $V_{GS} = 0\text{ V}$	--	--	1	$\mu\text{A}$
	$V_{DS} = 16\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_J = 55^\circ\text{C}$	--	--	25	
$I_{GSS}$	$V_{GS} = \pm 12\text{ V}$ , $V_{DS} = 0\text{ V}$	--	--	$\pm 100$	nA
$I_{D(on)}$	$V_{GS} = 4.5\text{ V}$ , $V_{DS} = 5\text{ V}$	20	--	--	A
$V_{SD}$	$V_{GS} = 0\text{ V}$ , $I_S = 1.7\text{ A}$	--	0.7	--	V
Gfs	$V_{DS} = 10\text{ V}$ , $I_D = 6\text{ A}$	--	22	--	S

## MSQ99N26

Dual N-Channel 20-V (D-S) MOSFET

Dynamic Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
$t_{d(on)}$	$V_{DD} = 15\text{ V}$ , $I_D = 1\text{ A}$ , $R_L = 15\ \Omega$ $V_{GEN} = 4.5\text{ V}$	--	22	--	ns
$t_r$		--	40	--	ns
$t_{d(off)}$		--	50	--	ns
$t_f$		--	20	--	ns
$Q_g$	$V_{DS} = 15\text{ V}$ , $I_D = 6\text{ A}$ , $V_{GS} = 4.5\text{ V}$	--	7.4	--	nC
$Q_{gs}$		--	0.9	--	nC
$Q_{gd}$		--	2.0	--	nC

### Notes

- Pulse test:  $PW \leq 300\ \mu\text{s}$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

## MSQ99N26

Dual N-Channel 20-V (D-S) MOSFET

■ Characteristics Curve

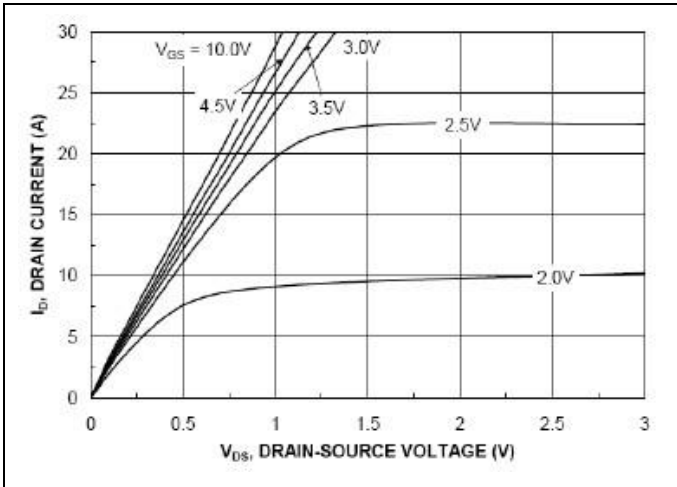


FIG.1-OUTPUT CHARACTERISTICS

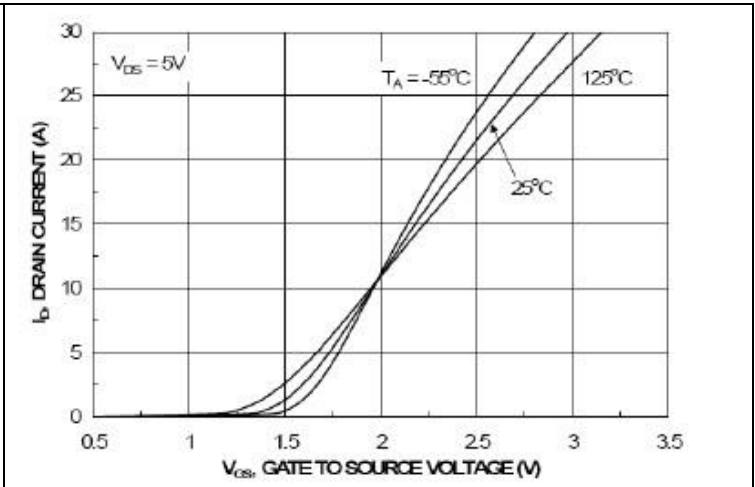


FIG.2-CAPACITANCE

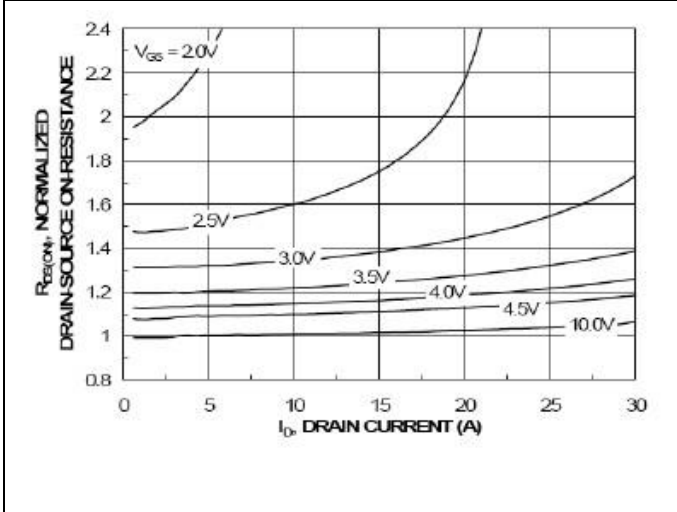


FIG.3-ON-RESISTANCE VS DRAIN CURRENT

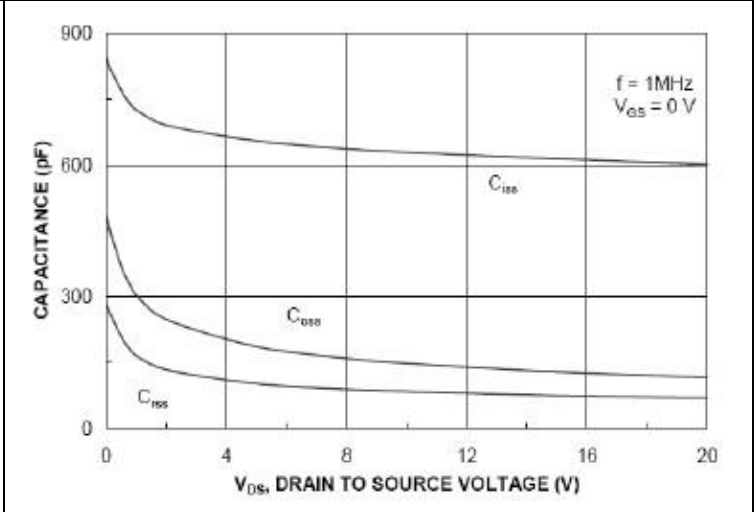
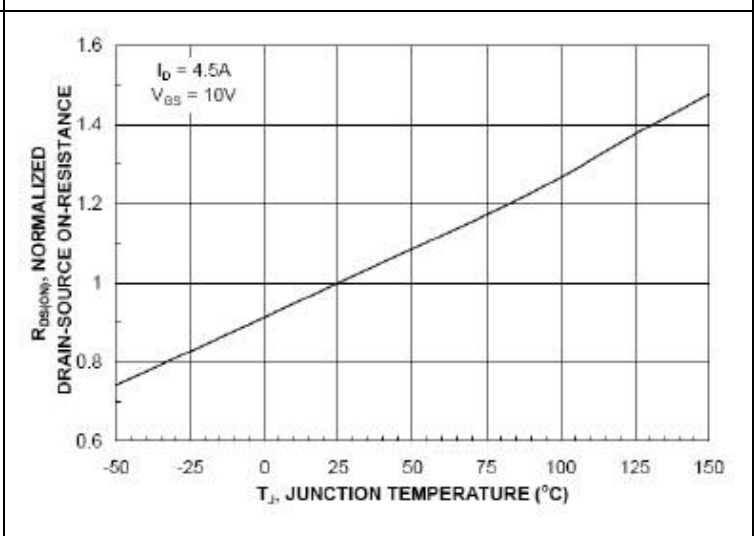
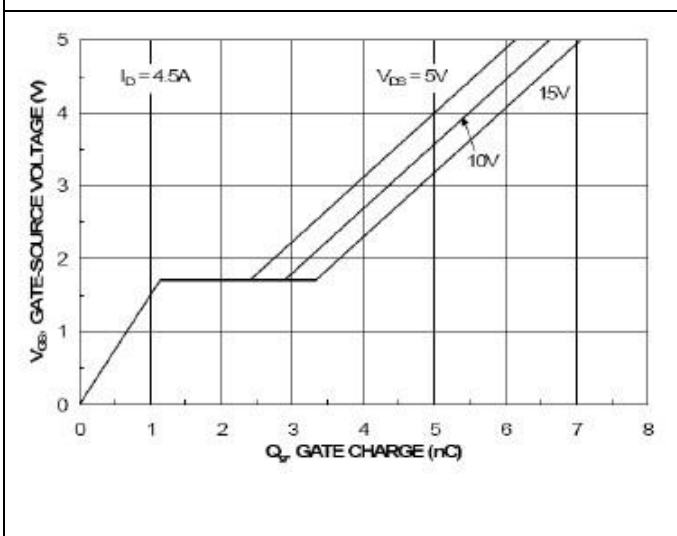


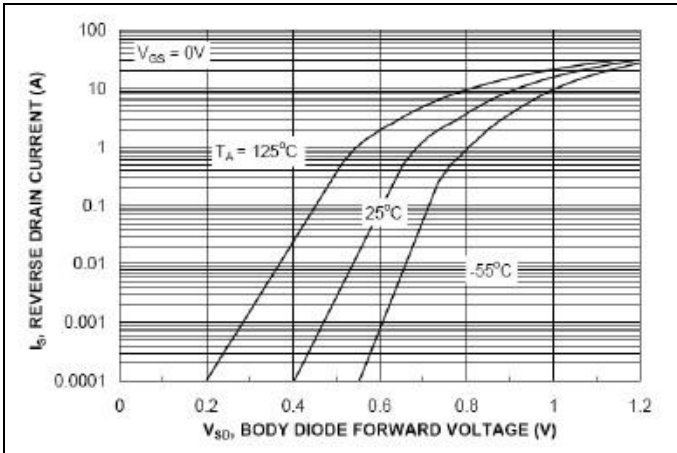
FIG.4-JUNCTION TEMPERATURE



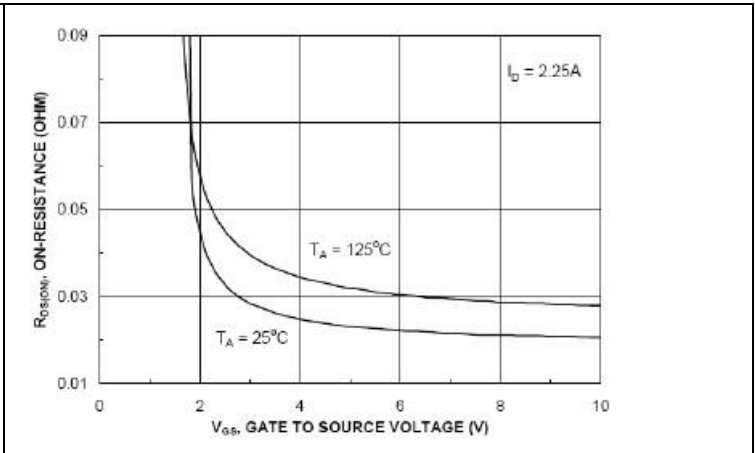
## MSQ99N26

### Dual N-Channel 20-V (D-S) MOSFET

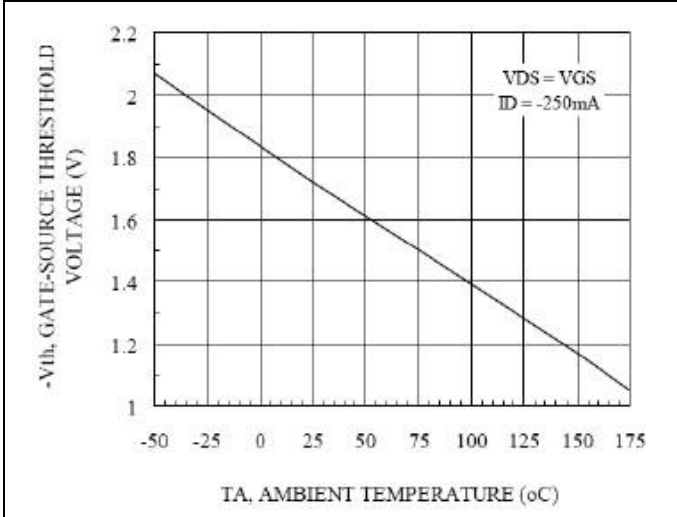
#### ■ Characteristics Curve



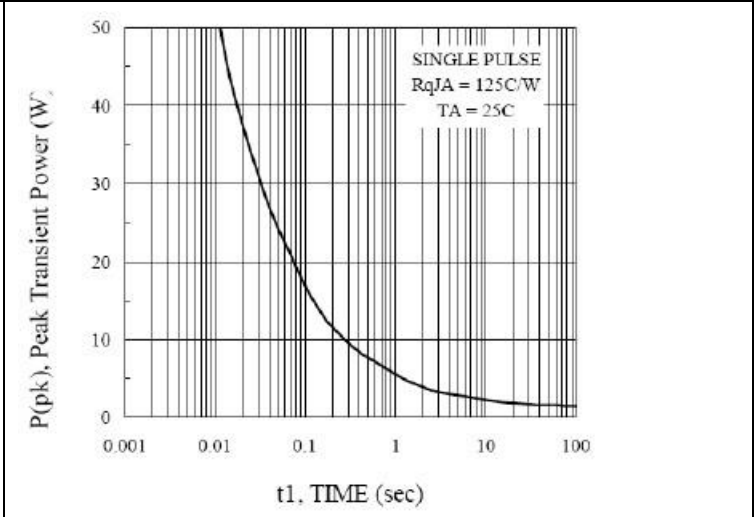
**FIG.7-SOURCE-DRAIN DIODE FORWARD VOLTAGE**



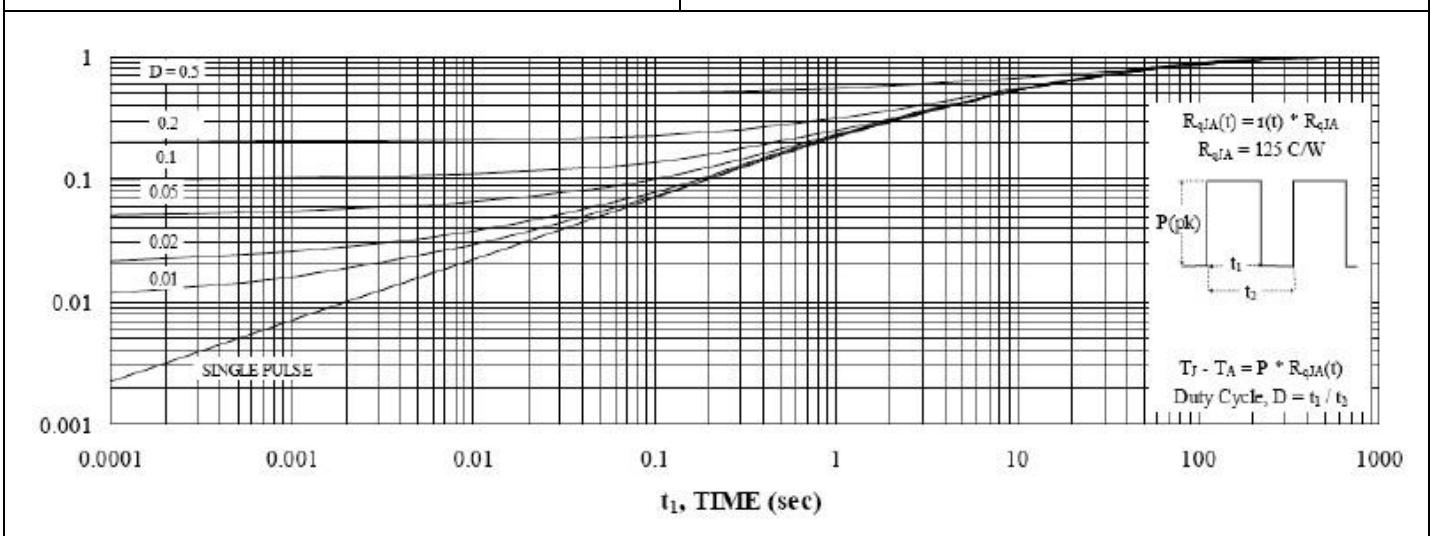
**FIG.8-ON-RESISTANCE VS. GATE-TO-SOURCE VOLTAGE**



**FIG.9-VTH GATE TO SOURCE VOLTAGE VS TEMPERATURE**



**FIG.10-SINGLE PULSE POWER, JUNCTION TO AMBIENT**



**FIG.11-NORMALIZED THERMAL TRANSIENT JUNCTION TO AMBIENT**

## MSQ99N26

Dual N-Channel 20-V (D-S) MOSFET

### Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Bruckewell Technology Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Bruckewell"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Bruckewell makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Bruckewell disclaims

- (i) Any and all liability arising out of the application or use of any product.
- (ii) Any and all liability, including without limitation special, consequential or incidental damages.
- (iii) Any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Bruckewell's knowledge of typical requirements that are often placed on Bruckewell products in generic applications.

Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time.

Product specifications do not expand or otherwise modify Bruckewell's terms and conditions of purchase, including but not limited to the warranty expressed therein.