

MS99N45

Dual N Channel 60-V (D-S) MOSFET

Features

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- RoHS compliant package

Typical Applications:

- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

Package type : SO-8

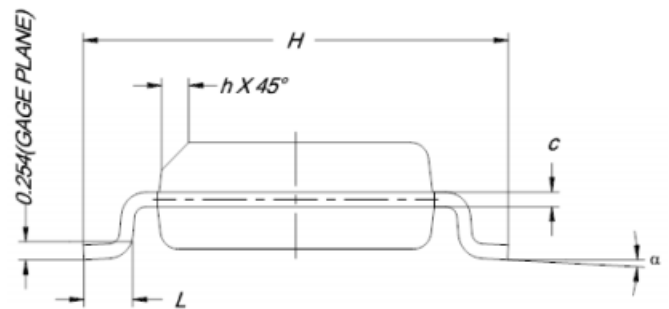
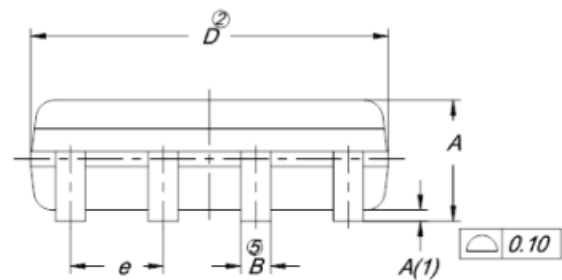
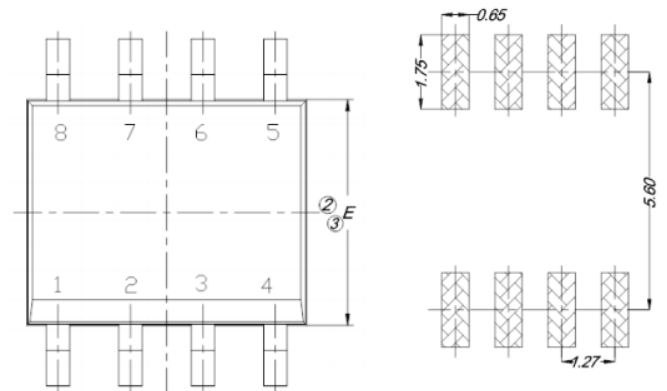
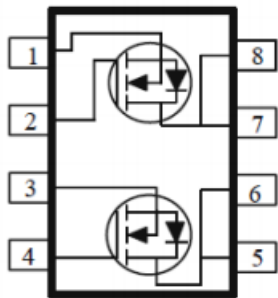
Packing & Order Information

3,000/Reel



RoHS
COMPLIANT

Graphic symbol



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

MS99N45

Dual N Channel 60-V (D-S) MOSFET

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ^a ($T_A=25^\circ\text{C}$)	3.6	A
	Continuous Drain Current ^a ($T_A=70^\circ\text{C}$)	3.1	A
I_{DM}	Pulsed Drain Current ^b	20	A
I_S	Continuous Source Current (Diode Conduction) ^a	1.7	A
P_D	Power Dissipation ^a ($T_A=25^\circ\text{C}$)	2.1	W
	Power Dissipation ^a ($T_A=70^\circ\text{C}$)	1.3	W
T_J/T_{STG}	Operating Junction and Storage Temperature	1.3	$^\circ\text{C}$

Thermal Resistance Ratings

Symbol	Parameter	Maximum	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ^a ($t \leq 10$ sec)	62.5	$^\circ\text{C/W}$
	Maximum Junction-to-Ambient ^a (Steady-State)	110	

Notes

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

Static

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1			V
I_{GSS}	Gate-Body Leakage	$V_{DS} = 0$ V, $V_{GS} = \pm 20$ V			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 48$ V, $V_{GS} = 0$ V $V_{DS} = 48$ V, $V_{GS} = 0$ V, $T_J = 55^\circ\text{C}$			1 25	μA
$I_{D(on)}$	On-State Drain Current	$V_{DS} = 5$ V, $V_{GS} = 10$ V	8			A
$r_{DS(on)}$	Drain-Source On-Resistance	$V_{GS} = 10$ V, $I_D = 2.9$ A $V_{GS} = 4.5$ V, $I_D = 2.7$ A			89 104	m Ω
g_{fs}	Forward Transconductance	$V_{GS} = 15$ V, $I_D = 2.9$ A		10		S
V_{SD}	Diode Forward Voltage	$I_S = 0.9$ A, $V_{GS} = 0$ V		0.78		V

MS99N45

Dual N Channel 60-V (D-S) MOSFET

Dynamic						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
Q_g	Total Gate Charge	$V_{DS} = 30\text{ V}$, $I_D = 2.9\text{ A}$, $V_{GS} = 4.5\text{ V}$	--	40	--	nC
Q_{gs}	Gate-Source Charge		--	1.2	--	nC
Q_{gd}	Gate-Drain Charge		--	2.1	--	nC
$t_{d(on)}$	Turn-On Delay Time	$I_D = 2.9\text{ A}$, $R_L = 10.4\ \Omega$, $V_{GEN} = 10\text{ V}$, $R_{GEN} = 6\ \Omega$, $V_{DS} = 30\text{ V}$	--	3	--	ns
t_r	Rise Time		--	6	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	17	--	ns
t_f	Fall Time		--	5	--	ns
C_{ISS}	Input Capacitance	$V_{DS} = 15\text{ V}$, $f = 1\text{ MHz}$, $V_{GS} = 0\text{ V}$	--	297	--	pF
C_{OSS}	Output Capacitance		--	40	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	28	--	pF

Notes

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

MS99N45

Dual N Channel 60-V (D-S) MOSFET

Typical Electrical Characteristics

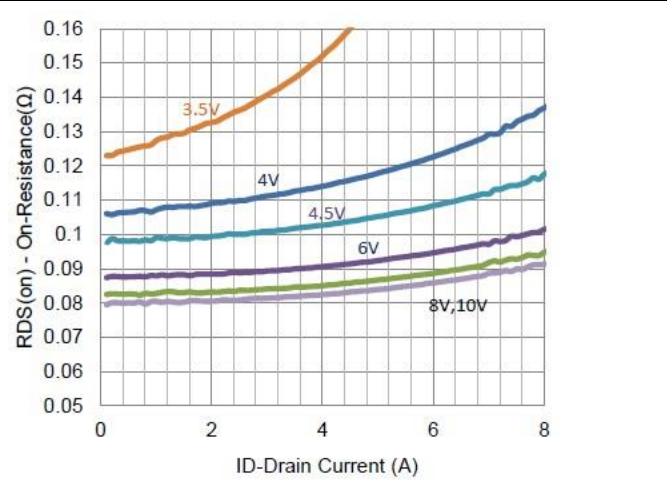


FIG.1-ON-RESISTANCE VS. DRAIN CURRENT

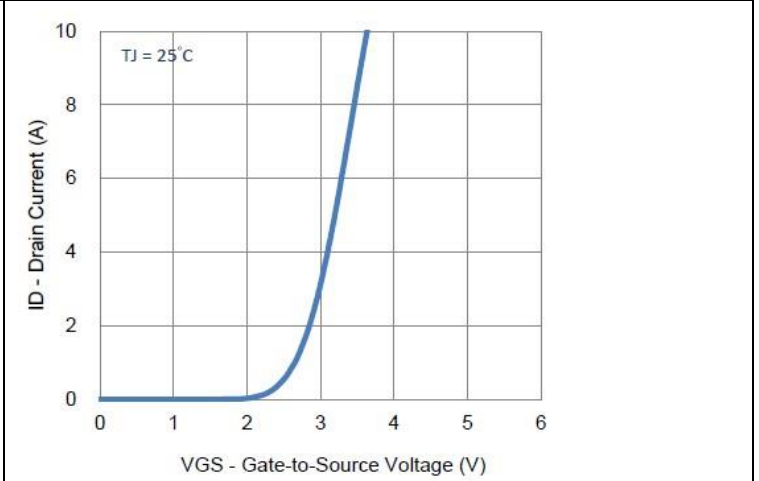


FIG.2-TRANSFER CHARACTERISTICS

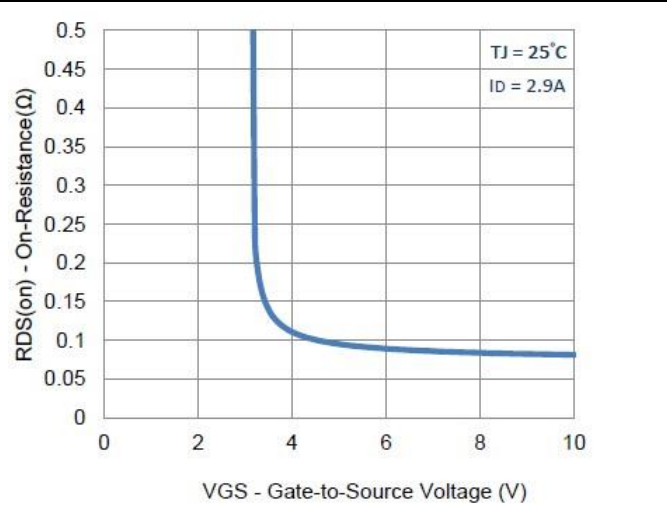


FIG.3-ON-RESISTANCE VS GATE-TO-SOURCE VOLTAGE

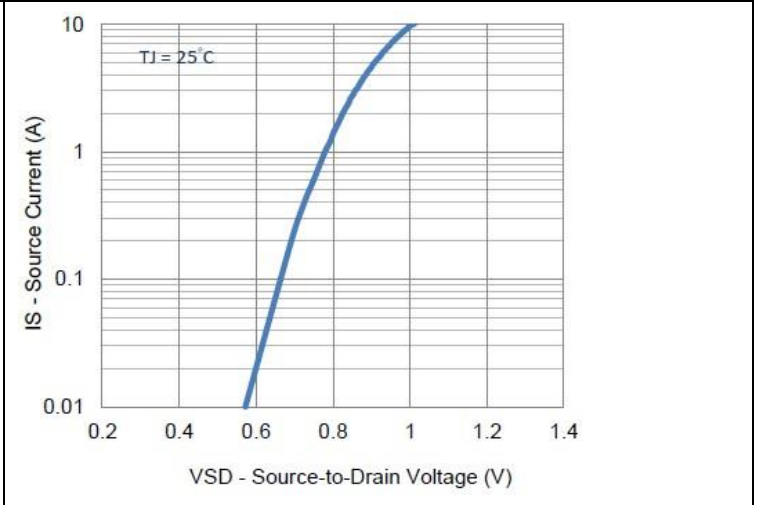


FIG.4-DRAIN-TO-SOURCE FORWARD VOLTAGE

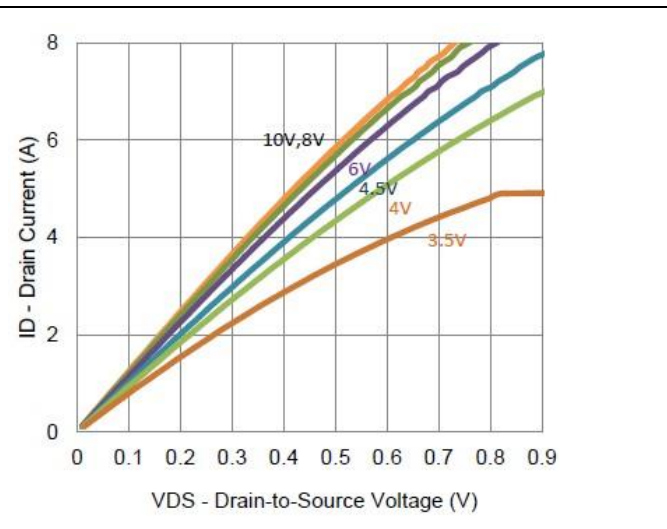


FIG.5-OUTPUT CHARACTERISTICS

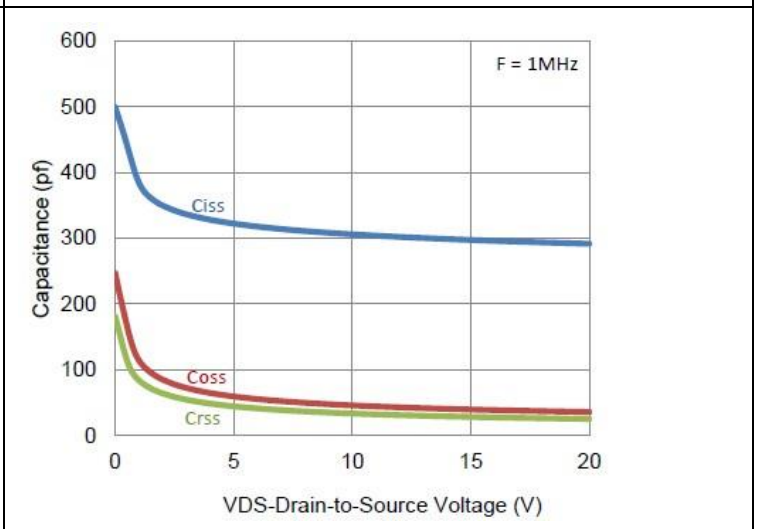
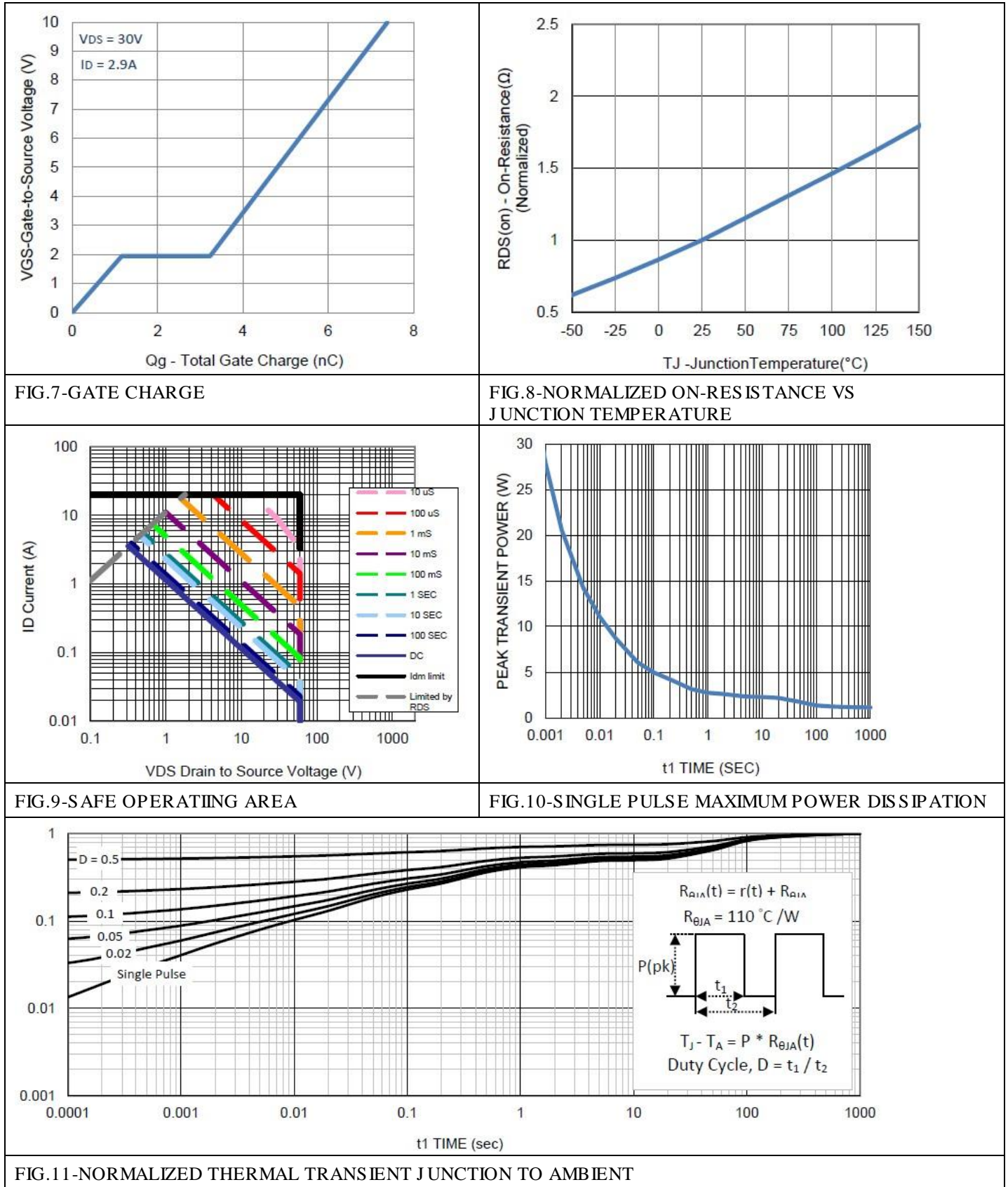


FIG.6-CAPACITANCE

MS99N45

Dual N Channel 60-V (D-S) MOSFET

Typical Electrical Characteristics



MS99N45

Dual N Channel 60-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.