

MS23N18

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

Description

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are lower voltage application, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

Features

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

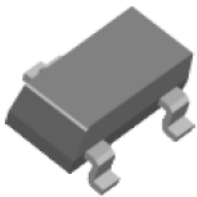
Typical Applications:

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

Package type : SOT-23

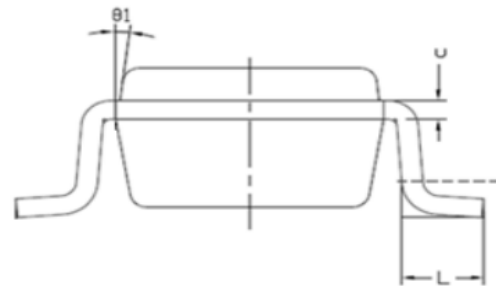
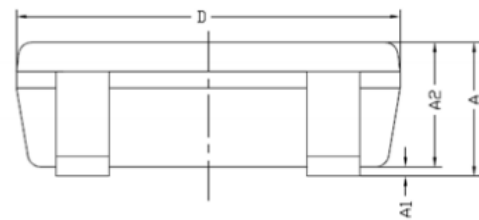
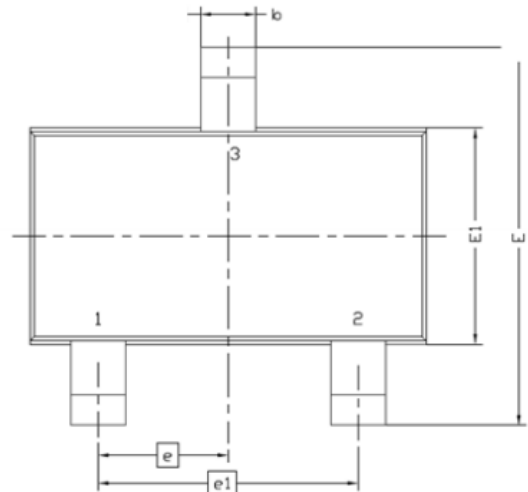
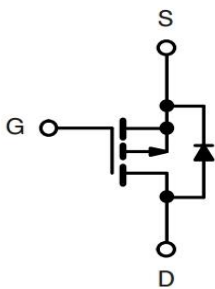
Packing & Order Information

3,000/Reel



**RoHS
COMPLIANT**

Graphic symbol



Symbol	MILLIMETERS	
	MIN	MAX
A	0.8	1.2
A1	0	0.1
A2	0.7	1.1
b	0.3	0.5
c	0.1	0.2
D	2.7	3.1
E	2.6	3
E1	1.4	1.8
e	0.95 BSC	
e1	1.9 BSC	
L	0.3	0.6
θ1	7° NOM	

MS23N18

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

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current ^a (T _A =25°C)	2.4	A
	Continuous Drain Current ^a (T _A =70°C)	1.9	A
I _{DM}	Pulsed Drain Current ^b	10	A
I _S	Continuous Source Current (Diode Conduction) ^a	1.9	A
P _D	Power Dissipation ^a (T _A =25°C)	1.3	W
	Power Dissipation ^a (T _A =70°C)	0.8	W
T _J /T _{STG}	Operating Junction and Storage Temperature	-55 to +150	°C

Thermal Resistance Ratings

Symbol	Parameter	Maximum	Units
R _{θJA}	Maximum Junction-to-Ambient C/W ^a (t ≤ 10 sec)	100	°C/W
	Maximum Junction-to-Ambient C/W ^a (Steady-State)	166	

Notes

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

Electrical Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250 μA	1			V
I _{GSS}	Gate-Body Leakage	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24 V, V _{GS} = 0 V V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C			1 25	uA
I _{D(on)}	On-State Drain Current ^A	V _{DS} = 5 V, V _{GS} = 10 V	5			A
r _{DS(on)}	Drain-Source On-Resistance ^A	V _{DS} = 10 V, I _D = 1.9 A V _{DS} = 4.5 V, I _D = 1.6 A			160 250	mΩ
g _{fs}	Forward Transconductance ^A	V _{GS} = 15 V, I _D = 1.9 A		6		S
V _{SD}	Diode Forward Voltage	I _S = 0.95 A, V _{GS} = 0 V		0.84		V

MS23N18

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

Dynamic ^b						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
Q_g	Total Gate Charge	$V_{DS} = 15\text{ V}$, $I_D = 1.9\text{ A}$, $V_{GS} = 4.5\text{ V}$	--	1.4	--	nC
Q_{gs}	Gate-Source Charge		--	0.4	--	nC
Q_{gd}	Gate-Drain Charge		--	0.7	--	nC
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 15\text{ V}$, $I_D = 1.9\text{ A}$, $V_{GEN} = 10\text{ V}$, $R_L = 7.9\ \Omega$, $R_{GEN} = 6\ \Omega$	--	2	--	ns
t_r	Rise Time		--	5	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	12	--	ns
t_f	Fall Time		--	4	--	ns
C_{ISS}	Input Capacitance	$V_{DS} = 15\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1.0\text{ MHz}$	--	103	--	pF
C_{OSS}	Output Capacitance		--	21	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	16	--	pF

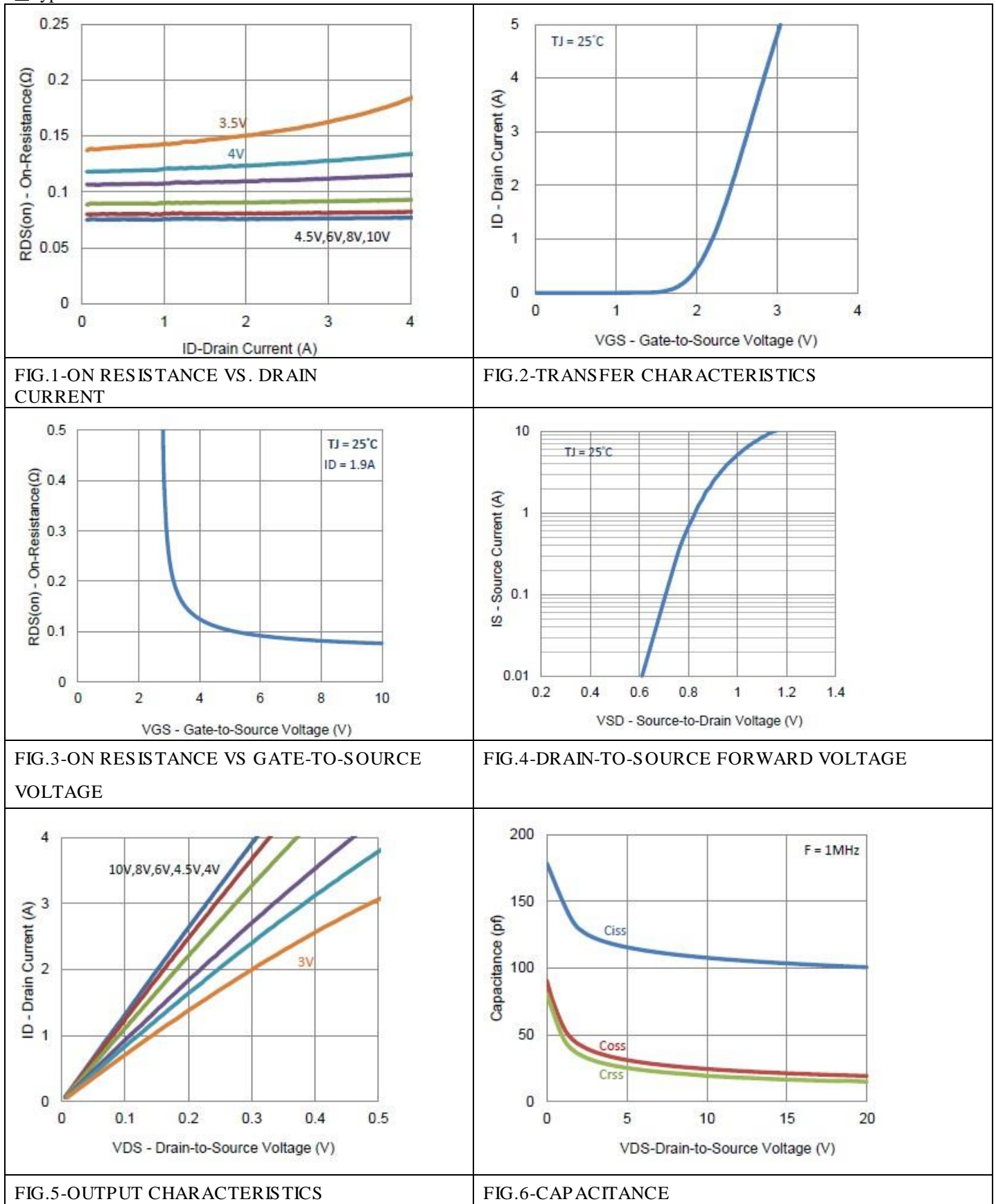
Notes

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

MS23N18

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

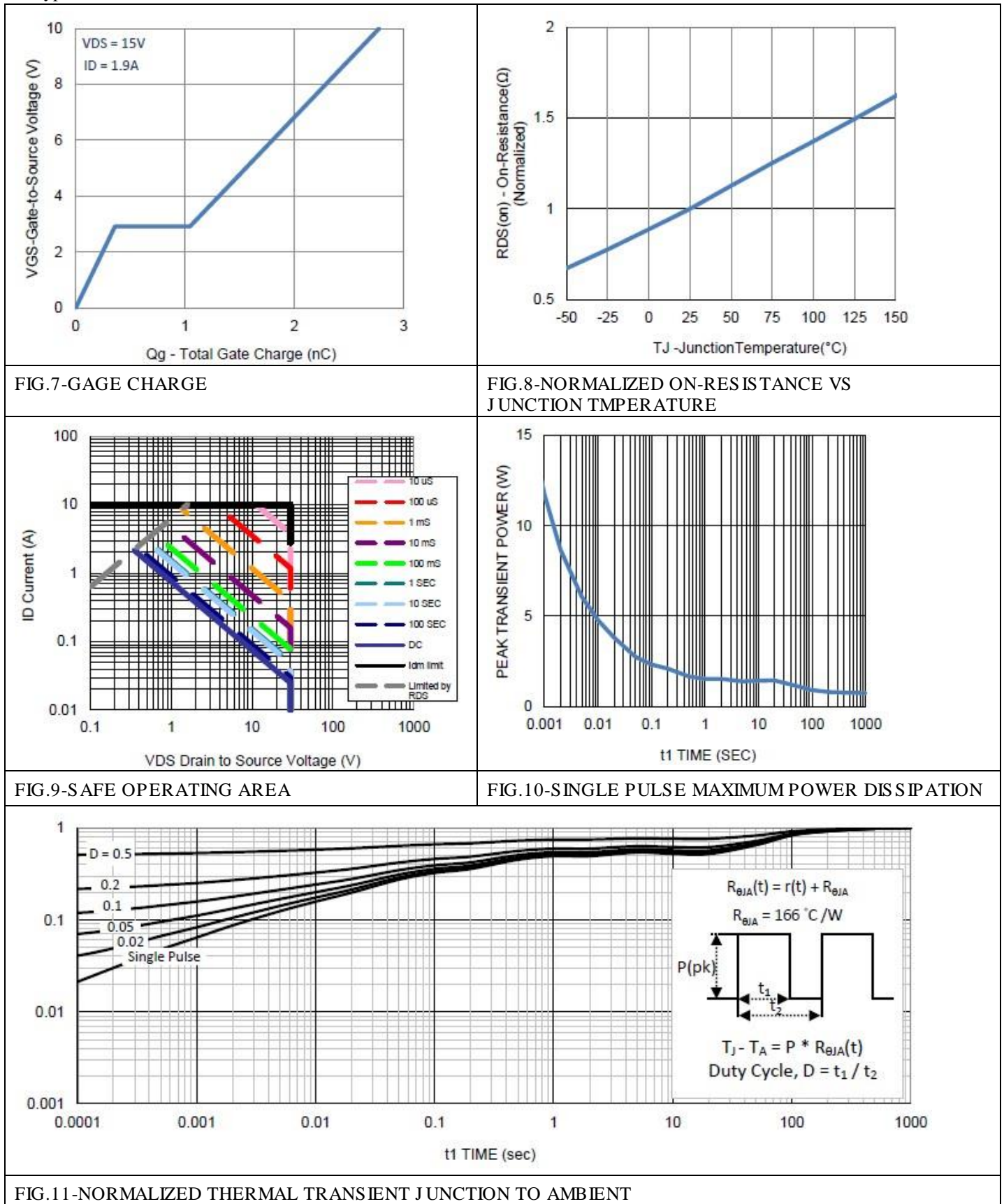
Typical Electrical Characteristics



MS23N18

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

Typical Electrical Characteristics



MS23N18

N-Channel 30-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.