

MS70N03

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

Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ 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 $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- RoHS compliant package

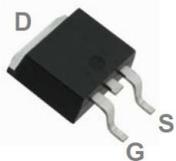
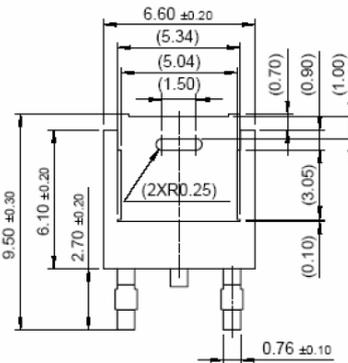
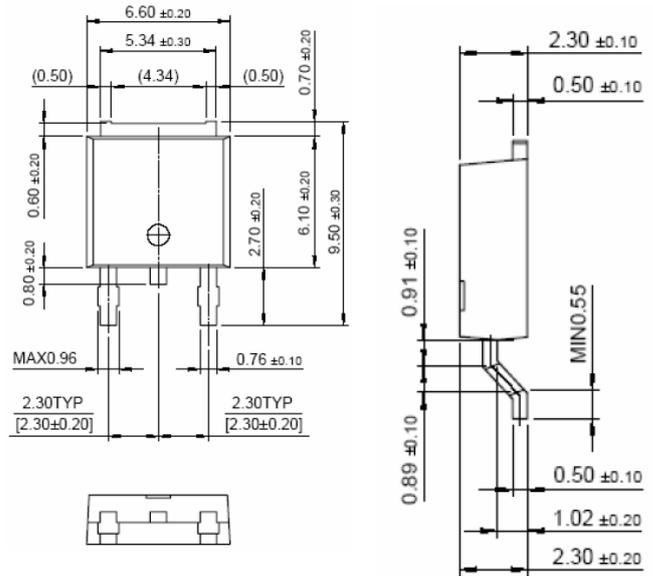
Typical Applications:

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

Packing & Order Information

Part No./ T : 2,500/Tape&Reel

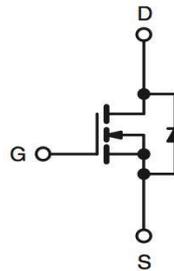
Part No./ R : 80/Tube , 4,000/Box



RoHS
COMPLIANT

Graphic symbol

Graphic symbol



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	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current ^a ($T_A=25^\circ\text{C}$)	75	A
I_{DM}	Pulsed Drain Current ^b	300	A
I_S	Continuous Source Current (Diode Conduction) ^a	30	A

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Symbol	Parameter	Value	Unit
P_D	Power Dissipation ^a ($T_A = 25^\circ\text{C}$)	50	W
T_J/T_{STG}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$
$R_{\theta JA}$	Maximum Junction-to-Ambient ^a ($t \leq 10$ sec)	40	$^\circ\text{C/W}$
$R_{\theta JC}$	Maximum Junction-to-Ambient ^a (Steady-State)	3	

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	$V_{DS} = 24$ V, $V_{GS} = 0$ V $V_{DS} = 24$ 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	120			A
$r_{DS(on)}$	Drain-Source On-Resistance	$V_{DS} = 10$ V, $I_D = 20$ A $V_{GS} = 4.5$ V, $I_D = 18$ A			6 8	m Ω
g_{fs}	Forward Transconductance	$V_{GS} = 15$ V, $I_D = 20$ A		20		S
V_{SD}	Diode Forward Voltage	$I_S = 15$ A, $V_{GS} = 0$ V		0.84		V

Dynamic

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
Q_g	Total Gate Charge	$V_{DS} = 15$ V, $I_D = 20$ A, $V_{GS} = 4.5$ V	--	20	--	nC
Q_{gs}	Gate-Source Charge		--	7.3	--	nC
Q_{gd}	Gate-Drain Charge		--	11	--	nC
$t_{d(on)}$	Turn-On Delay Time	$I_D = 20$ A, $R_L = 0.8$ Ω , $V_{GEN} = 10$ V, $R_{GEN} = 6$ Ω $V_{DS} = 15$ V	--	10	--	ns
t_r	Rise Time		--	13	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	51	--	ns
t_f	Fall Time		--	21	--	ns
C_{ISS}	Input Capacitance	$V_{DS} = 15$ V $f = 1$ MHz, $V_{GS} = 0$ V	--	1785	--	pF
C_{OSS}	Output Capacitance		--	323	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	285	--	pF

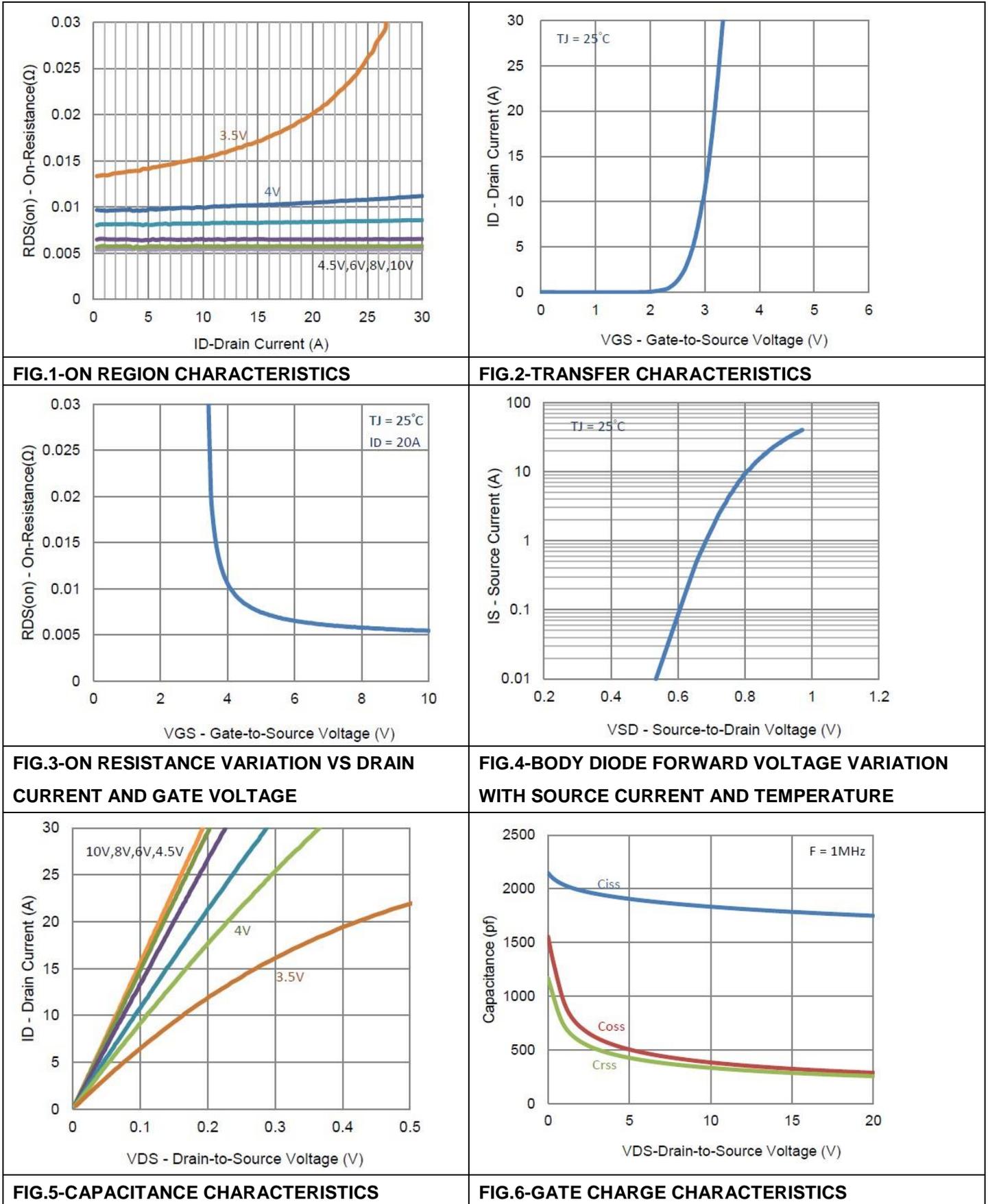
Notes

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

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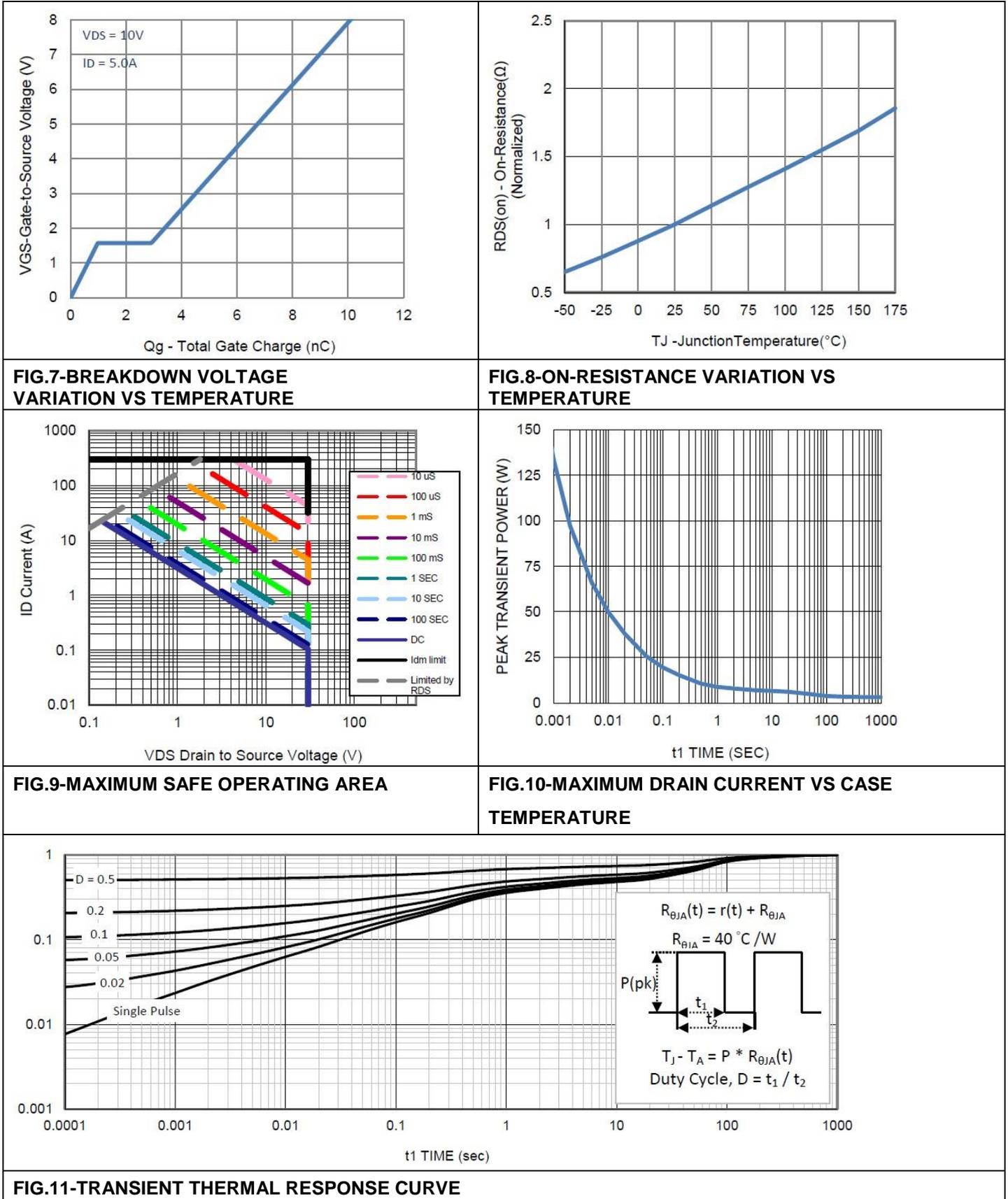
Typical Electrical Characteristics



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