

N-Channel Enhancement Mode Power MOSFET

Description

The MS10N65 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications

Features

- BVDSS=700V typically @ Tj=150°C
- Low On Resistance
- · Simple Drive Requirement
- Low Gate Charge
- · Fast Switching Characteristic
- · RoHS compliant package

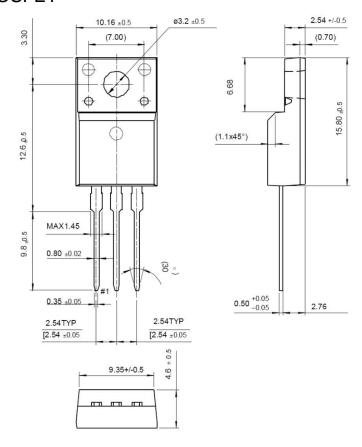
Application

- Power Factor Correction
- LCD TV Power
- · Full and Half Bridge Power

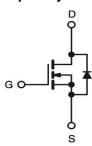
Packing & Order Information

50/Tube; 1,000/Box





Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Tc=25°C unless otherwise specified)				
Symbol	Parameter	Value	Unit	
V_{DS}	Drain-Source Voltage	650	V	
V_{GS}	Gate-Source Voltage	±30	V	
1	Drain Current -Continuous (TC=25°C)	9.5	A	
I _D	Drain Current -Continuous (TC=100°C)	6.0	A	
I_{DM}	Pulsed Drain Current	38	A	
E _{AS}	Single Pulsed Avalanche Energy	700	mJ	
E _{AR}	Repetitive Avalanche Energy	15.6	mJ	
dV/dt	Peak Diode Recovery dV/dt	5.5	V/ns	

[•] Drain current limited by maximum junction temperature



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Absolute Maximum Ratings (Tc=25°C unless otherwise specified)					
Symbol	Parameter Value Unit				
D	Power Dissipation (TC=25°C)	5.5	W		
P_D	Power Dissipation (TC=100°C)	0.4	W		
T _J /T _{STG}	Operating Junction and Storage Temperature	-55 to +150	°C		

NOTE:

1. Repetitive rating; pulse width limited by maximum junction temperature.

Thermal characteristics (Tc=25°C unless otherwise noted)				
Symbol	Parameter	Тур.	Max.	Units
$R_{ heta JC}$	Typical thormal registance		0.8	°C/W
$R_{\theta JA}$	Typical thermal resistance		62.5	C/VV

Static Characteristics					
Symbol	Test Conditions	Min	Тур.	Max.	Units
V_{GS}	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
*R _{DS(ON)}	$V_{GS} = 10 \text{ V}$, $I_D = 4.75 \text{ A}$		0.7	0.85	mΩ
BV _{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu A$	650	710		V
$\Delta BV_{DSS}/\Delta T_{J}$	I _D = 250μA, Referenced to 25°C		0.6		
I _{DSS}	$V_{DS} = 650 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{DS} = 520 \text{ V}, V_{GS} = 0 \text{ V}, T_j = 125^{\circ}\text{C}$			10 100	uA
G _{FS}	$V_{DS} = 30 \text{ V}, V_{DS} = 0 \text{ V}$			100	S
I _{GSS}	V _{DS} = -30 V, V _{DS} = 0 V			-100	nA

Switching Characteristics					
Symbol	Test Conditions	Min	Тур.	Max.	Units
Q_g			30	40	nC
Q_{gs}	$V_{DS} = 520 \text{ V}, I_D = 10 \text{ A},$ $V_{GS} = 10 \text{ V}$		5		
Q_{gd}	V _{GS} = 10 V		14		
t _{d(on)}			20	40	ns
t _r	$V_{DS} = 325 \text{ V}, I_{D} = 10 \text{ A},$		30	60	ns
$t_{d(off)}$	$R_G = 25 \Omega$		90	180	ns
tf			40	80	ns
C _{ISS}	$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1.0 \text{MHz}$		1210	1580	pF
C _{OSS}			145	190	pF
C _{RSS}			16	20	pF



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Source-Drain Diode Characteristics					
Symbol	Test Conditions	Min	Тур.	Max.	Units
Is				9.5	
I _{SM}				38	A
V _{SD}	IF = 10 A , V _{GS} = 0 V			1.5	V
t _{rr}	IE 40 A V 0 V IIE/I/ 400A/		450		ns
Q _{rr}	$IF = 10 A$, $V_{GS} = 0 V$, $dIF/dt=100A/\mu s$		4.2		uC

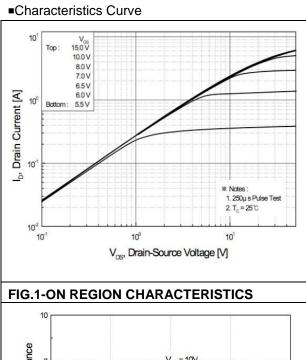
Notes:

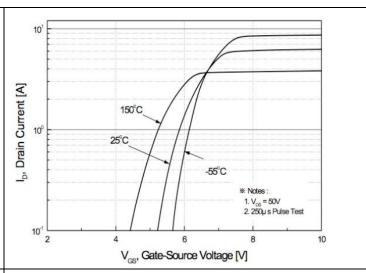
- 1. Repeativity rating: pulse width limited by junction temperature
- 2. I_{AS} =10A, V_{DD} =50V, R_{G} =25 Ω , Starting TJ =25 $^{\circ}$ C
- 3. $I_{SD} \le 10A$, di/dt $\le 300A/\mu s$, VDD $\le BVDSS$, Starting TJ =25 °C
- 4. Pulse Test : Pulse Width ≤ 300us, Duty Cycle ≤ 2%
- 5. Essentially independent of operating temperature.

Ordering Information		
Package	Shipping	
TO-220	50 pcs/tube	



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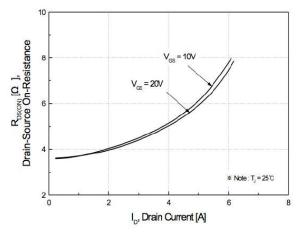


FIG.2-TRANSFER CHARACTERISTICS

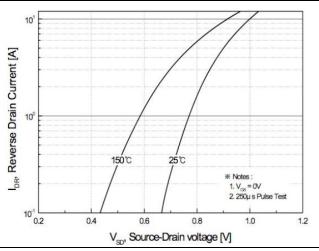


FIG.3-ON RESISTANCE VARIATION VS DRAIN CURRENT AND GATE VOLTAGE

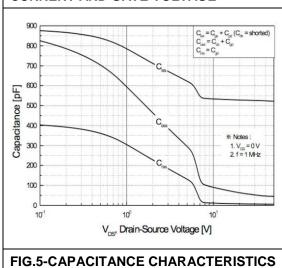


FIG.4-BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE

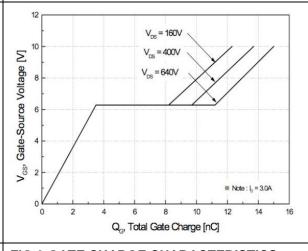
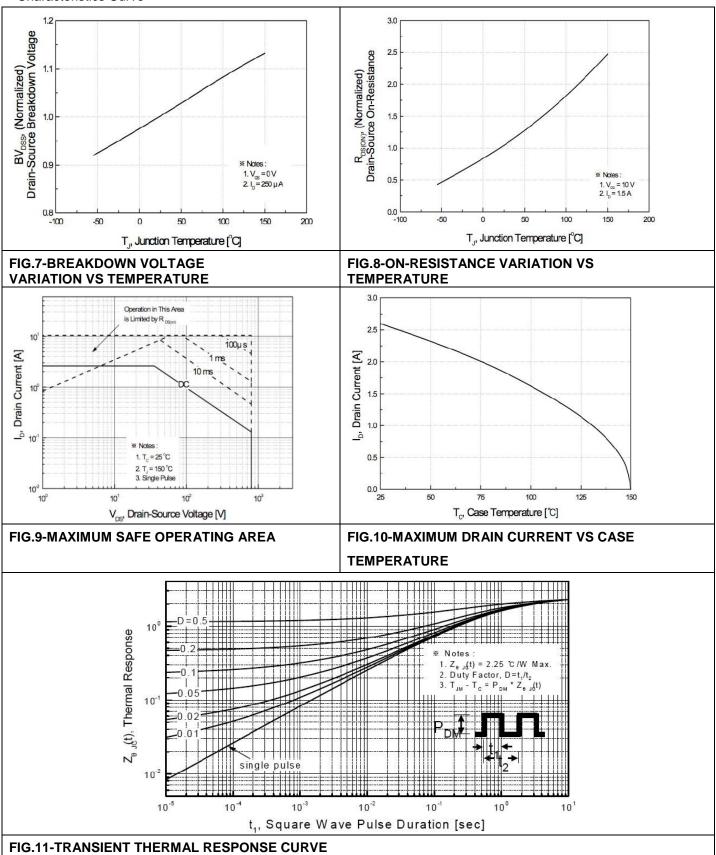


FIG.6-GATE CHARGE CHARACTERISTICS



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■Characteristics Curve





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