



4N65

N-Channel Power MOSFET

TO-251

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	3.0Ω@10V	4A

GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast recovery time. Designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

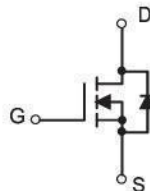
1. GATE
2. DRAIN
3. SOURCE



FEATURE

- High Current Rating
- Lower $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified

EQUIVALENT CIRCUIT



Maximum ratings ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	
Continuous Drain Current	I_D	4.0	A
Pulsed Drain Current	I_{DM}	16	
Single Pulsed Avalanche Energy (note1)	E_{AS}	280	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~+150	$^{\circ}C$
Maximum lead temperature for soldering purposes , 1/8"from case for 5 seconds	T_L	260	

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	650			V
Drain-source diode forward voltage(note2)	V _{SD}	V _{GS} = 0V, I _S = 4.0A			1.5	
Zero gate voltage drain current	I _{DSS}	V _{DS} = 600V, V _{GS} = 0V			25	μA
Gate-body leakage curren (note2)	I _{GSS}	V _{DS} = 0V, V _{GS} = ±30V			± 100	nA
On characteristics (note2)						
Gate-threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.5	4.0	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 2.0A		2.3	3.0	Ω
Dynamic characteristics (note 3)						
Input capacitance	C _{iss}	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz			760	pF
Output capacitance	C _{oss}				180	
Reverse transfer capacitance	C _{rss}				20	
Switching characteristics (note 3)						
Total gate charge	Q _g	V _{DS} = 480V, V _{GS} = 10V, I _D = 4.0A		5.0	10	nC
Gate-source charge	Q _{gs}			2.7		
Gate-drain charge	Q _{gd}			2.0		
Turn-on delay time (note3)	t _{d(on)}	V _{DD} = 300V, V _{GS} = 10V, R _G = 9.1Ω, I _D = 4.0A			20	ns
Turn-on rise time (note3)	t _r				10	
Turn-off delay time (note3)	t _{d(off)}				40	
Turn-off fall time (note3)	t _f				20	

Notes :

1. L=30mH, I_L=4 A, V_{DD}=100V, R_G=25Ω, Starting T_J=25°C.
2. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
3. These parameters have no way to verify.

