12N65 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
650V	0.85Ω@10V	12A

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.

TO-220F

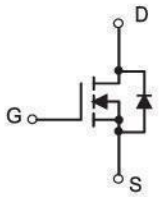
1. GATE
2. DRAIN
3. SOURCE

1 2 3

FEATURE

- High Current Rating
- Lower $R_{DS(on)}$
- Low Reverse Transfer Capacitance
- Fast Switching Capability
- Tighter V_{SD} Specifications
- Avalanche Energy Specified

Equivalent Circuit



Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GSS}	±30	
Continuous Drain Current	I_D	12	A
Pulsed Drain Current(note1)	I_{DM}	48	
Single Pulsed Avalanche Energy (note2)	E_{AS}	540	mJ
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~+150	℃
Maximum lead temperure for soldering purposes , 1/8"from case for 5 seconds	T_L	260	

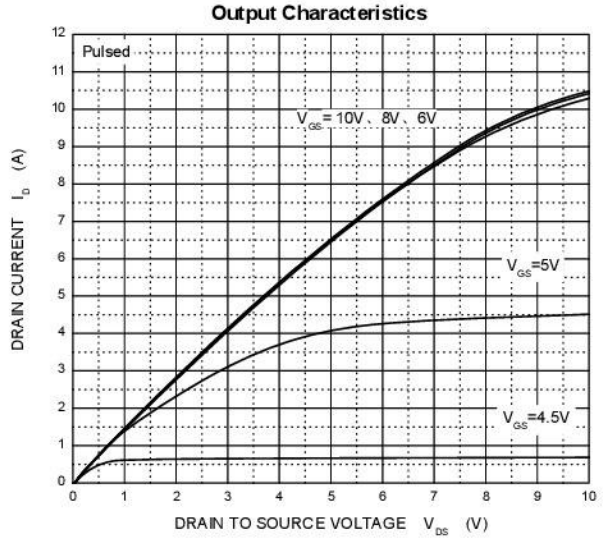
T_a=25 ℃ unless otherwise specified

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
Zero gate voltage drain current	I_{DSS}	V_{DS} =650V, V_{GS} =0V			1	μA
Gate-body leakage curren (note3)	I_{GSS}	V_{DS} =0V, V_{GS} =±30V			±100	nA
On characteristics (note3)						
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 =6A		0.7	0.85	Ω
Dynamic characteristics (note 4)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		1800		pF
Output capacitance	C_{oss}			200		
Reverse transfer capacitance	C_{rss}			25		
Switching characteristics (note1,3 4)						
Total gate charge	Q_g	V_{DS} =520V,V_{GS} =10V,I_D =12A		42	54	nC
Gate-source charge	Q_{gs}			8.6		
Gate-drain charge	Q_{gd}			21		
Turn-on delay time	$t_{d(on)}$	V_{DD}=325V, V_{GS}=10V, R_G=25Ω, I_D =12A		30		ns
Turn-on rise time	t_r			90		
Turn-off delay time	$t_{d(off)}$			160		
Turn-off fall time	t_f			90		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note3)	V_{SD}	V_{GS} = 0V, I_S =12A			1.4	V
Maximum continuous drain-source diode forward current	I_S				12	A
Maximum pulsed drain-source diode forward current	I_{SM}				48	A

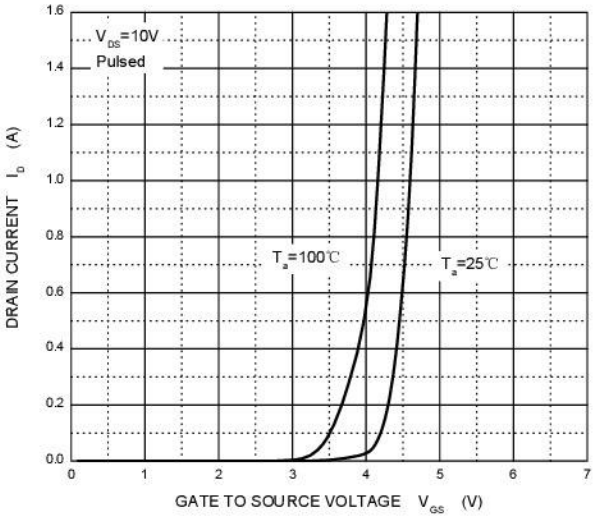
Notes :

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 7.5mH, I_{AS} = 12A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
4. These parameters have no way to verify.

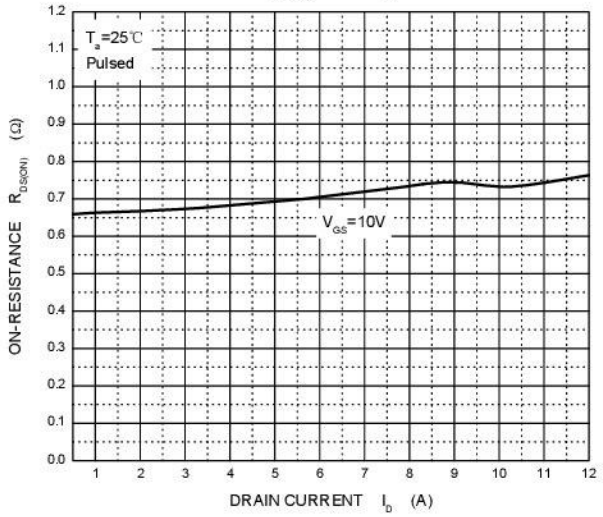
Output Characteristics



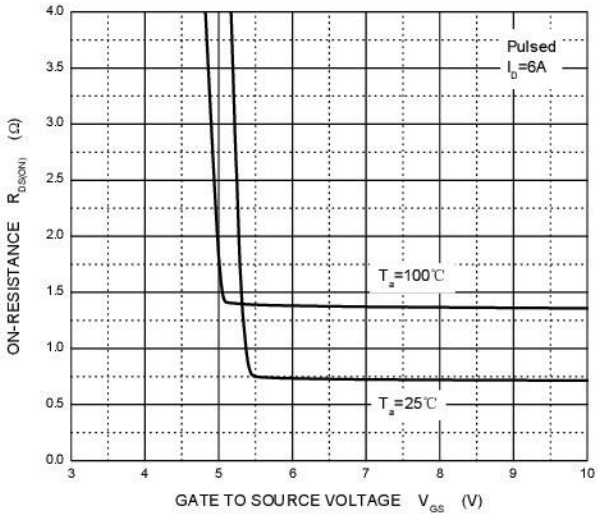
Transfer Characteristics



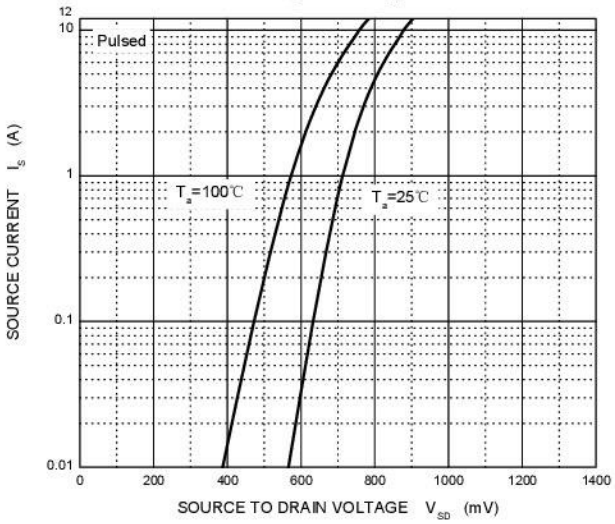
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage