

Descriptions

These N-channel MOSFET are produced using advanced plane MOSFET Technology, which provides Low on-state resistance, high switching performance and excellent quality. These devices are suitable device for SMPS, high Speed switching and general purpose applications.

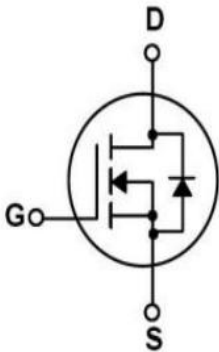
Features

- $V_{DS} = 650V$
- $I_D = 4A @ V_{GS} = 10V$
- $R_{DS(ON)} (Typ) = 2.4 \Omega @ V_{GS} = 10V$

Applications

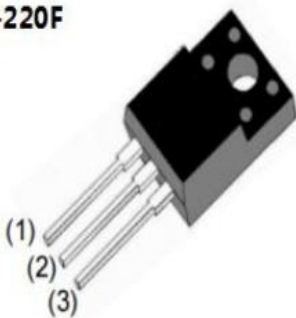
- Power Supply
- PFC
- High Current, High Speed Switching

Equivalent Circuit



Pinning

TO-220F



PIN1:Gate PIN2:Drain PIN3:Source

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Drain Current	$I_D(T_C=25^{\circ}\text{C})$	4.0	A
Drain Current	$I_D(T_C=100^{\circ}\text{C})$	2.5	A
Drain Current - Pulsed	I_{DM}	16	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	240	mJ
Repetitive Avalanche Energy	E_{AR}	10	mJ
Avalanche Current	I_{AR}	4.0	A
Power Dissipation	$P_D(T_C=25^{\circ}\text{C})$	33	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$
Junction to Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Junction to Case	$R_{\theta JC}$	3.7	$^{\circ}\text{C/W}$

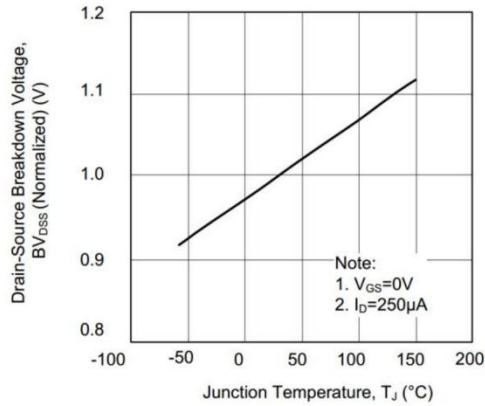
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$ $V_{GS}=0V$			1	μA
		$V_{DS}=480V$ $T_C=125^{\circ}\text{C}$			100	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=2.0A$		2.4	2.7	Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		700		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			20		
Total Gate Charge	Q_G	$V_{DS}=520V$, $I_D=4.0A$, $V_{GS}=10V$		102		nC
Gate-Source Charge	Q_{GS}			18		
Gate-Drain Charge	Q_{GD}			22		

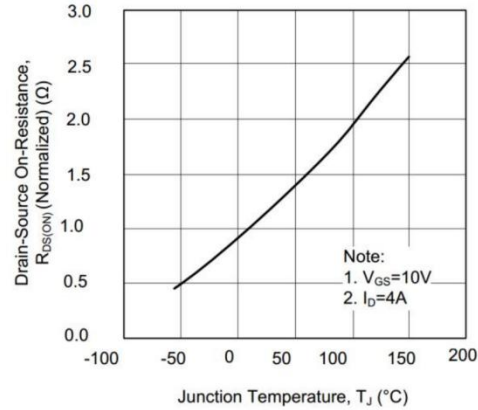
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=325V \quad I_D=4.0A$ $R_G=25\Omega$		48		ns
Turn-On Rise Time	t_r			102		
Turn-Off Delay Time	$t_{d(off)}$			205		
Turn-Off Fall Time	t_f			134		
Maximum Continuous Drain-Source Diode Forward Current	I_S				4.0	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				16	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, \quad I_S = 4.0A$			1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, \quad I_S = 4.4A,$ $dI_F/dt = 100 A/\mu s$		250		nS
Reverse Recovery Charge	Q_{rr}			1500		nC

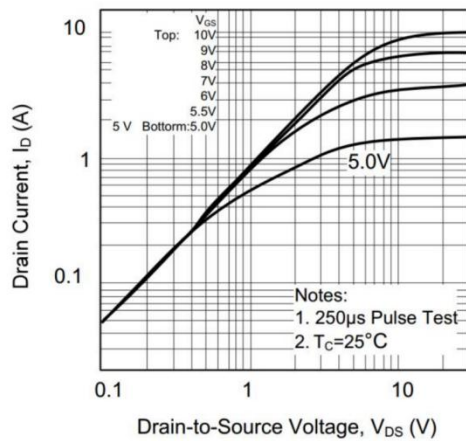
Electrical Characteristic Curve



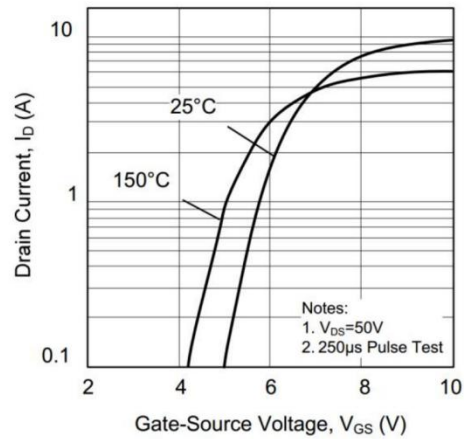
1. Breakdown Voltage Variation vs. Temperature



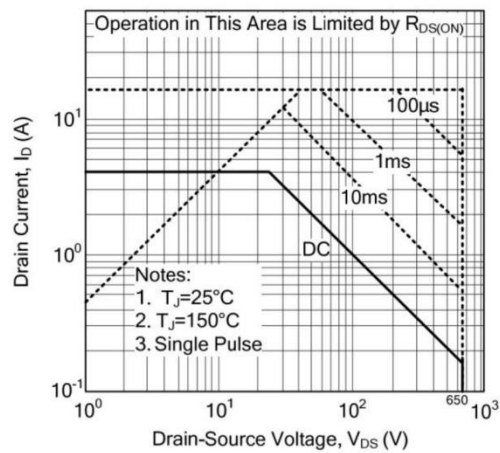
2. On-Resistance Junction Temperature



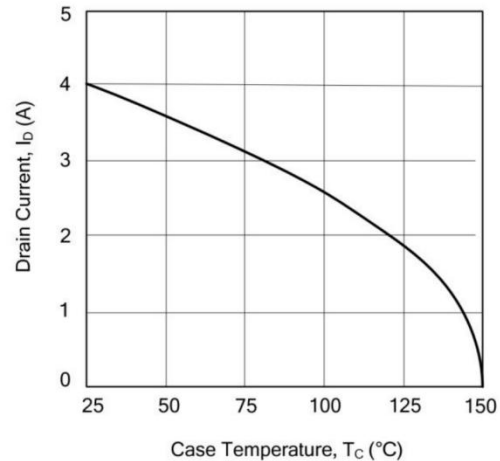
3. On-State Characteristics



4. Transfer Characteristics

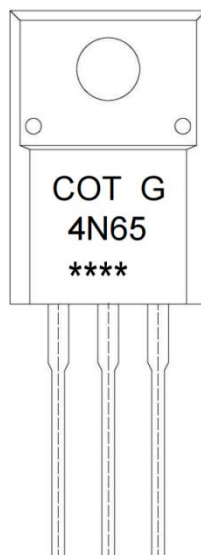


5. Safe Operating Area



6. Maximum Drain Current vs. Case Temperature

Marking Instructions



Note:

COT:

Company Logo

G:

Halogen Free

4N65:

Product Type.

****:

Lot No. Code, code change with Lot No.

Packaging SPEC.

BULK

Package Type	Units					Dimension (unit: mm ³)		
	Units/Bag	Bags/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Bag	Inner Box	Outer Box
TO-220F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

TUBE

Package Type	Units					Dimension (unit: mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-220F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

Package Outline Dimensions

T□-220F 单位: mm

