

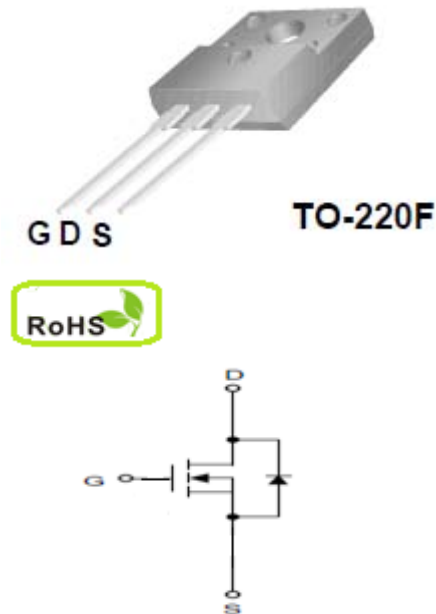
FEATURES

- 650V/4A
RDS(ON)= 3Ω max@ VGS=10V
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current

Application

- Power Supply

PIN DESCRIPTION



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Maximum	Unit
V _{DSS}	Drain-to-Source Voltage		650	V
V _{GSS}	Gate-to-Source Voltage		±30	V
I _D	Continuous Drain Current	T _C =25°C	4	A
		T _C =100°C	2.2	
P _D	Maximum Power Dissipation	T _C =25°C	25	W
		T _C =100°C	10	
T _J , T _{STG}	Junction & Storage Temperature Range		-55~150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
Rθjc	Thermal Resistance-Junction to Case	5.5	°C/W
Rθja	Thermal Resistance-Junction to Ambient	62.5	

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	650	—	—	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =520V, V _{GS} =0V	—	—	1	uA
		T _J =125°C	—	—	100	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	3.25	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±30V, V _{DS} =0V	—	—	±100	nA
R _{DS(on)} ¹	Drain-Source On-Resistance	V _{GS} =10V, I _D =2A	—	2.6	3	Ω
			—	—	—	
Diode Characteristics						
V _{SD} ¹	Diode Forward Voltage	I _{SD} =4A, V _{GS} =0V	—	—	1.3	V
I _S ³	Diode Continuous Forward Current		—	—	4	A
t _{rr}	Reverse Recovery Time	I _F =4A, dI/dt=100A/us	—	350	—	nS
Q _{rr}	Reverse Recovery Charge		—	3.3	—	nC
Dynamic Characteristics ²						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V Frequency=1MHz	—	549	—	pF
C _{oss}	Output Capacitance		—	3	—	
C _{rss}	Reverse Transfer Capacitance		—	38	—	
t _{d(on)}	Turn-On Delay Time	V _{DD} =325V, I _D =4A, V _{GS} =10V, R _G =4.7Ω	—	35	—	ns
t _r	Rise Time		—	80	—	
t _{d(off)}	Turn-Off Delay Time		—	50	—	
t _f	Fall Time		—	85	—	
Gate Charge Characteristics ²						
Q _g	Total Gate Charge	V _{DS} =520V, V _{GS} =10V I _D =4A	—	14	—	nC
Q _{gs}	Gate-to-Source Charge		—	4	—	
Q _{gd}	Gate-to-Drain Charge		—	3	—	

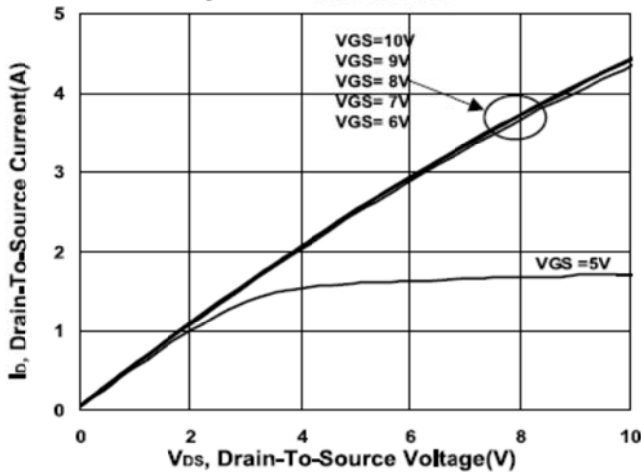
Note: 1: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2: Guaranteed by design, not subject to production testing.

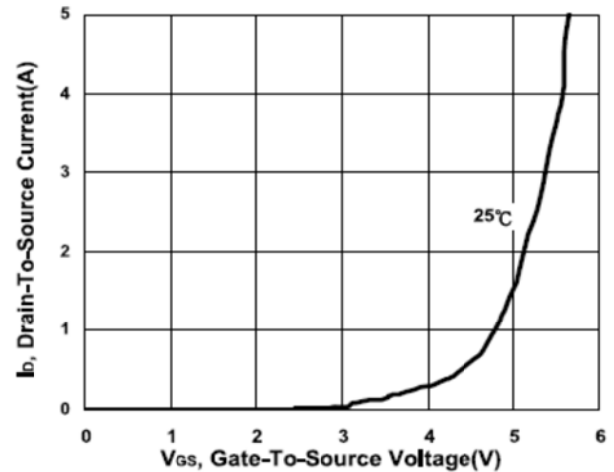
3: Repetitive rating, pulse width limited by max junction temperature.

Typical Operating Characteristics

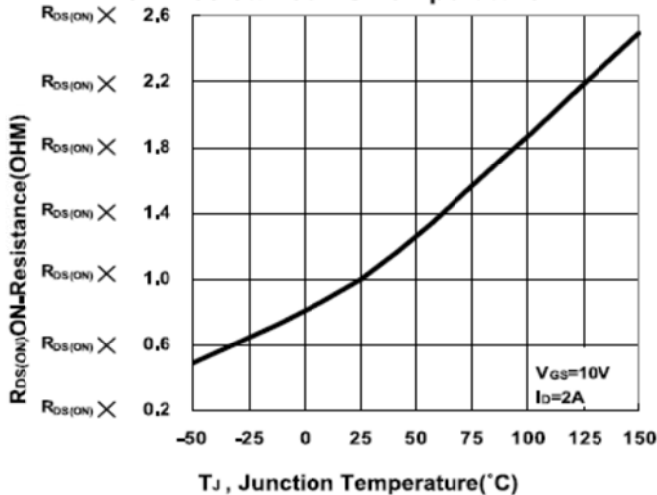
Output Characteristics



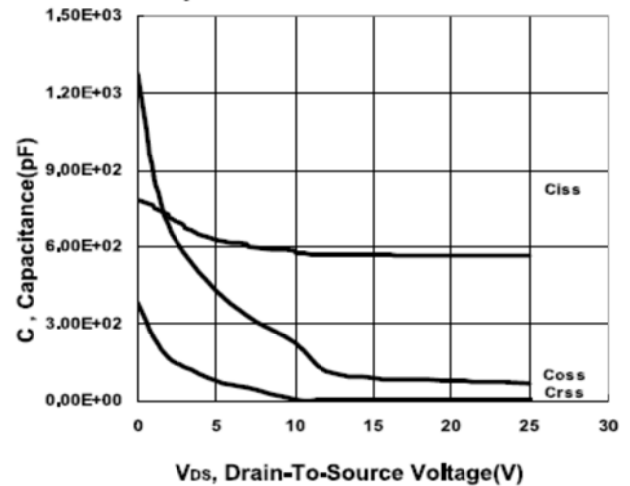
Transfer Characteristics



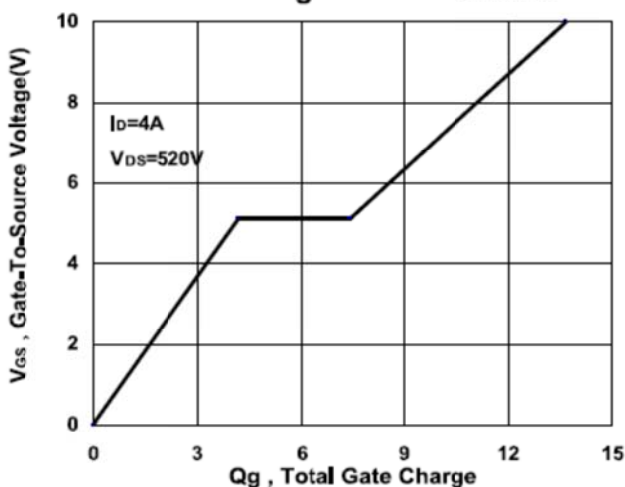
On-Resistance VS Temperature



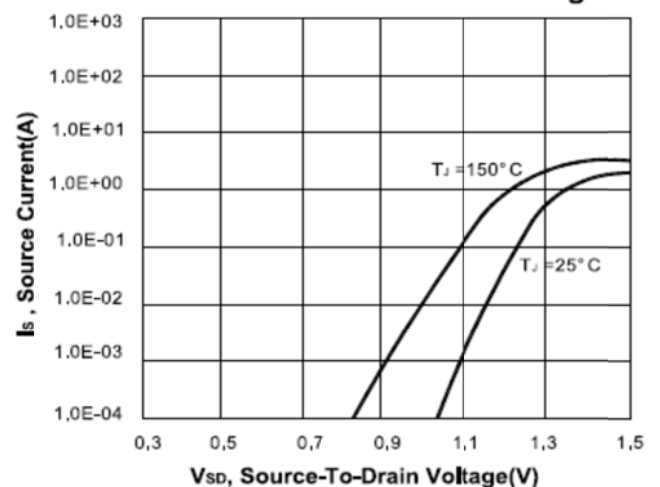
Capacitance Characteristic



Gate charge Characteristics

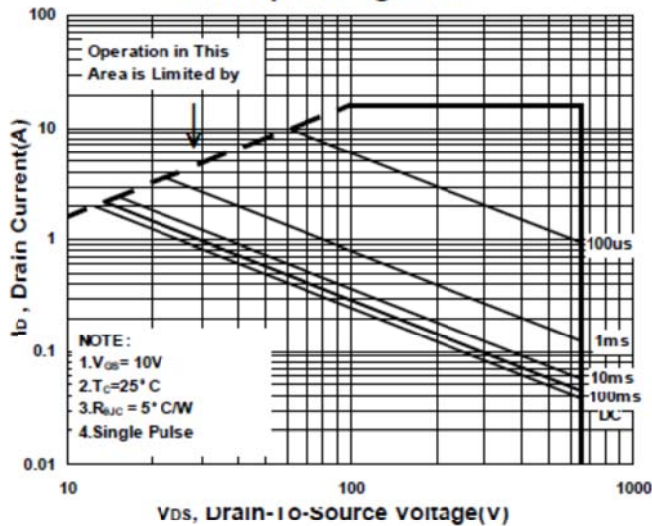


Source-Drain Diode Forward Voltage

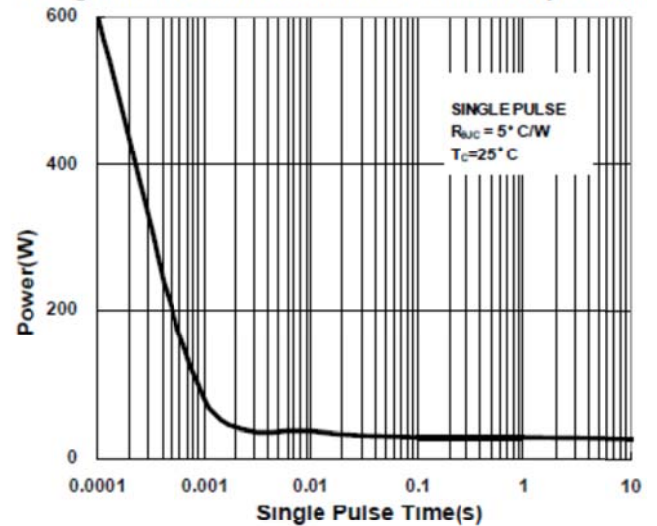


Typical Operating Characteristics

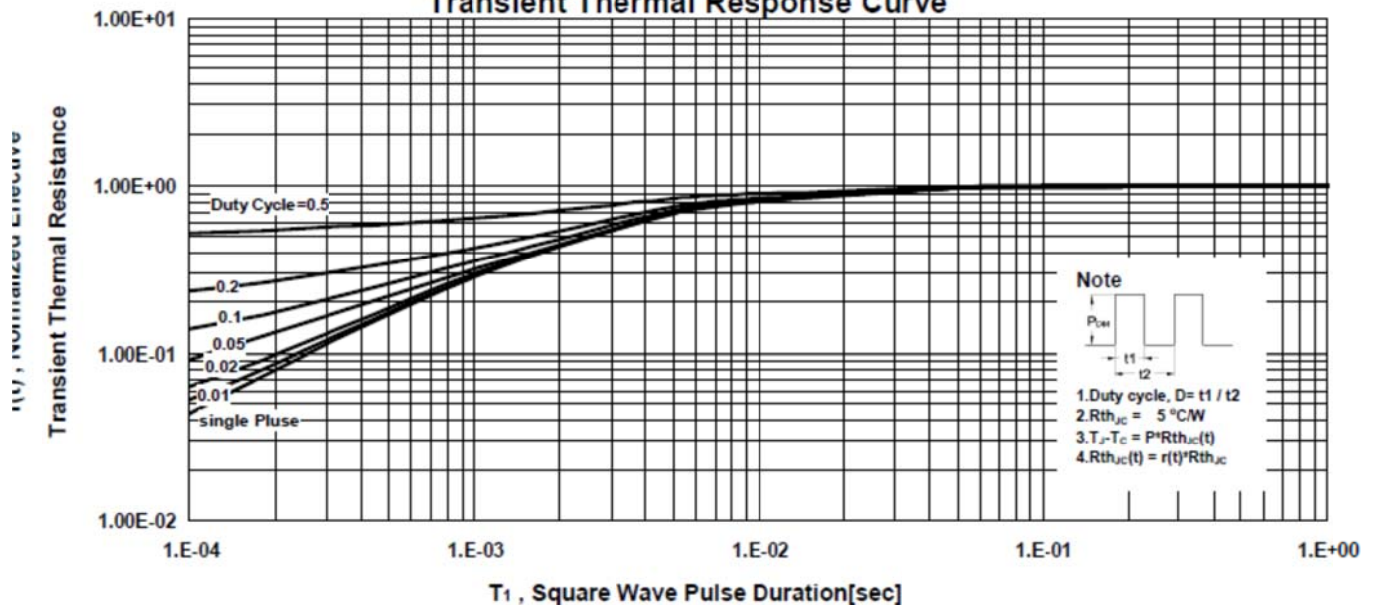
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.96	10.0	10.6	I	0.95	1.2	1.39
B	2.4	3.0	3.38	J	4.3	4.5	4.93
C	18.1	19.1	19.7	K	2.34		2.74
D	27.3	28.4	30	L	2.56		2.96
E	15.67		16.1	M	0.45		0.6
F	8.8	9.17	9.8	N		0.7	
G	0.5	0.75	0.91	O	2.8		3.4
H	2.3		2.74				

