

Features

- Fast switching
- Low Gate Charge
- Improved dv/dt capability
- 100% avalanche tested
- Green Device Available

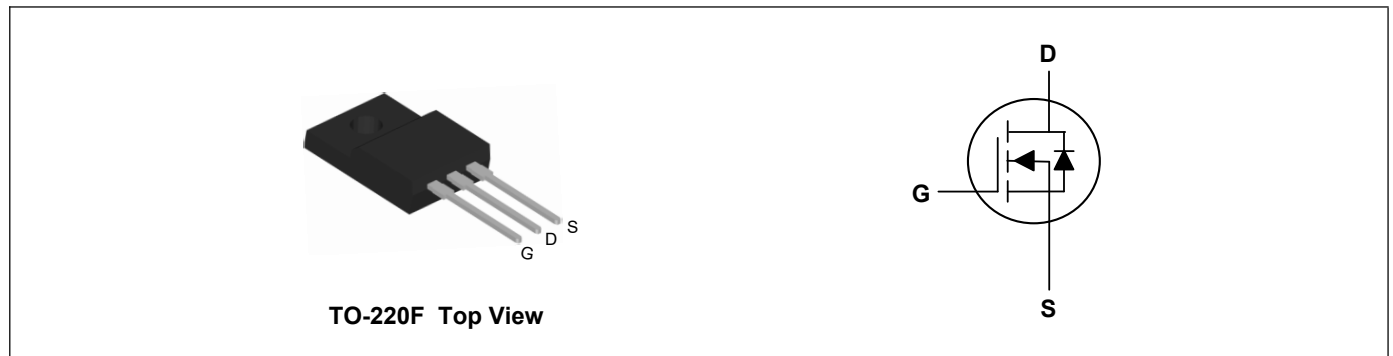
Product Summary



V_{DS}	650	V
I_D	16	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	0.49	Ω

Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- AC to DC Converters



Absolute Maximum Ratings($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ¹	$I_D@T_C=25^\circ C$	16	A
Pulsed Drain Current ²	I_{DM}	64	A
Single Pulse Avalanche Energy ³	EAS	1800	mJ
Total Power Dissipation ⁴	P_D	65	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	100	$^\circ C/W$
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.79	$^\circ C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=8A$	---	0.46	0.49	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	---	3.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	---	---	± 100	nA
Total Gate Charge	Q_g	$V_{DD}=325V, V_{GS}=10V, I_D=16A$	---	60	---	nC
Gate-Source Charge	Q_{gs}		---	11	---	
Gate-Drain Charge	Q_{gd}		---	24	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=325V, R_G=9.1\Omega, I_D=16A$	---	33	---	ns
Rise Time	T_r		---	78	---	
Turn-Off Delay Time	$T_{d(off)}$		---	170	---	
Fall Time	T_f		---	80	---	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2400	---	pF
Output Capacitance	C_{oss}		---	22.3	---	
Reverse Transfer Capacitance	C_{rss}		---	105	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I_S	$T_C=25^{\circ}\text{C}$	---	---	16	A
Pulsed Source Current ²	I_{SM}		---	---	64	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=16A, T_J=25^{\circ}\text{C}$	---	---	1.5	V
Reverse Recovery Time	t_{rr}	$I_F=16A, di_F/dt=100A/\mu s$	---	350	---	ns
Reverse Recovery Charge	Q_{rr}		---	3.3	---	μC

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature

Typical Characteristics

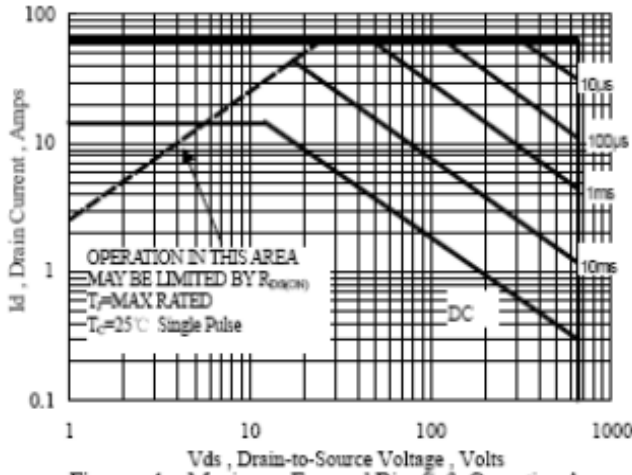


Figure 1 Maximum Forward Bias Safe Operating Area

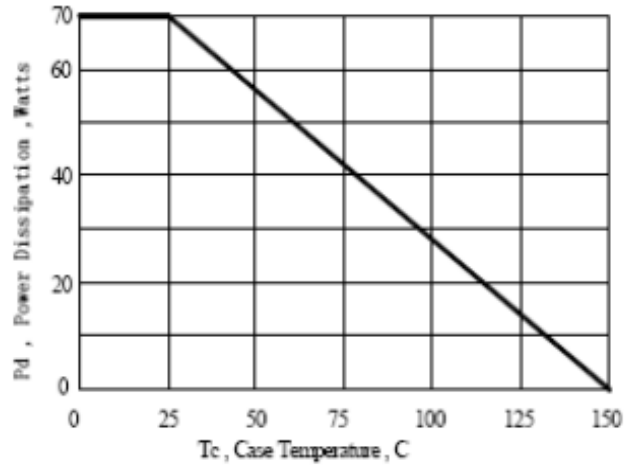


Figure 2 Maximum Power Dissipation vs Case Temperature

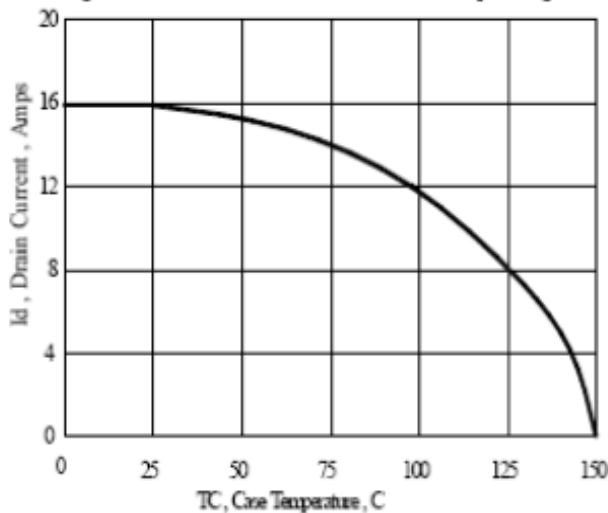


Figure 3 Maximum Continuous Drain Current vs Case Temperature

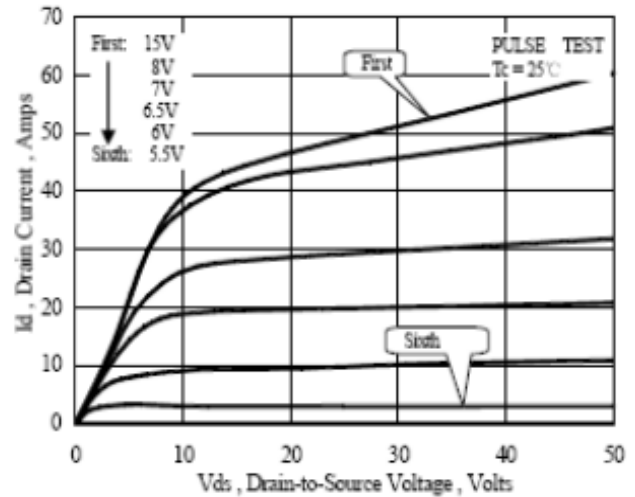


Figure 4 Typical Output Characteristics

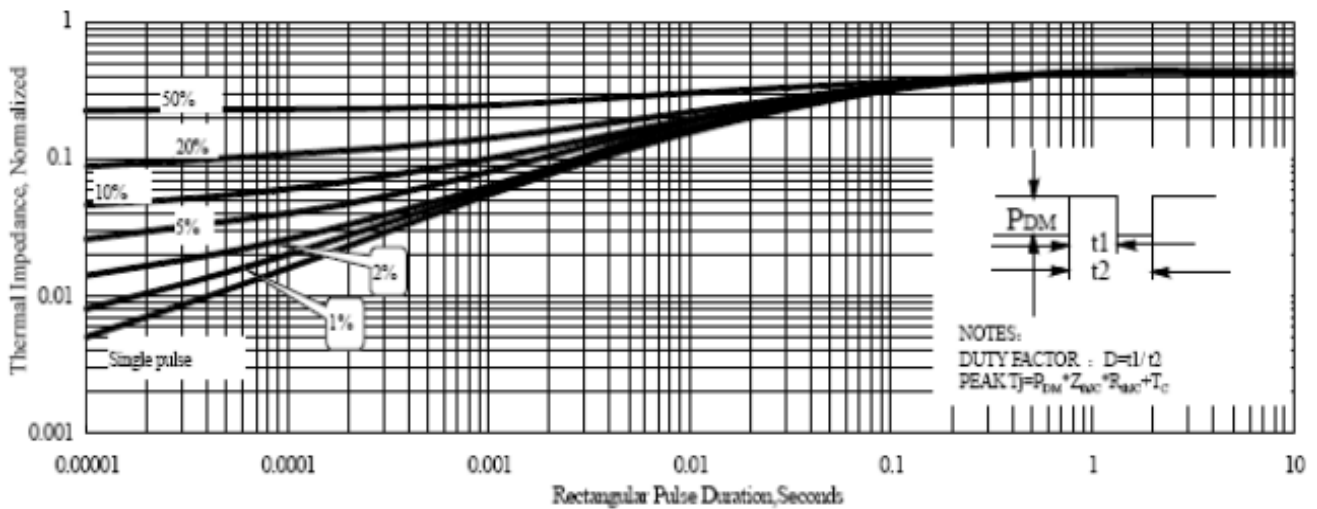
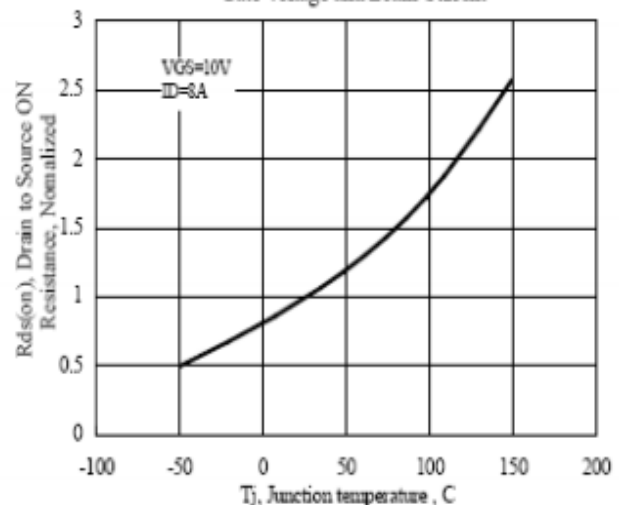
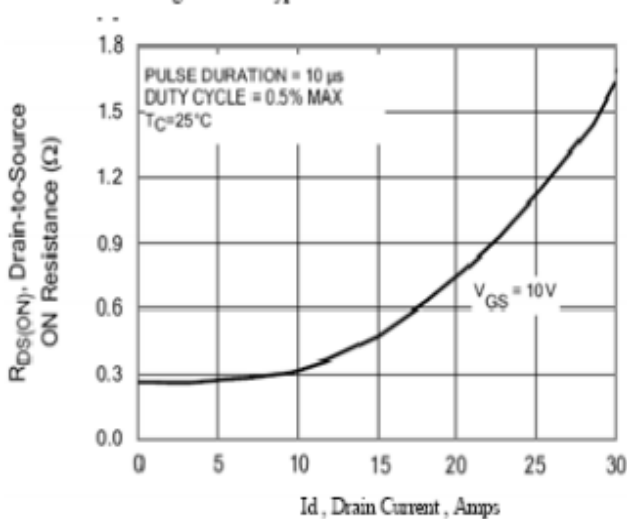
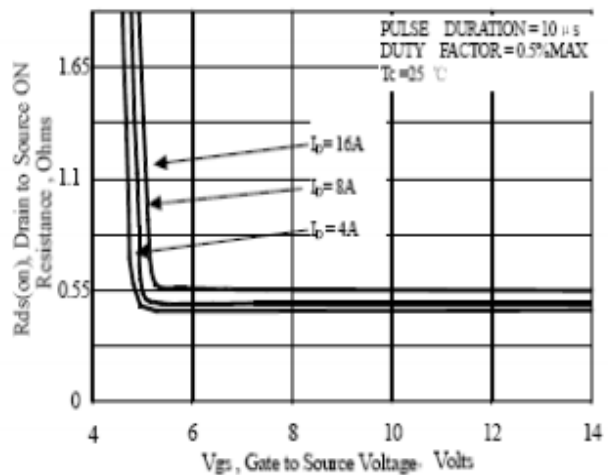
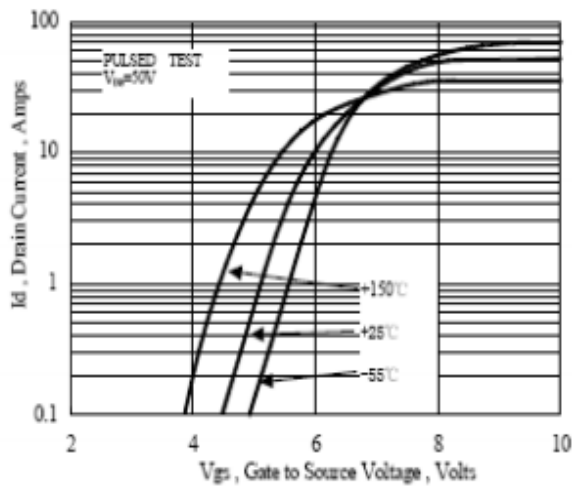
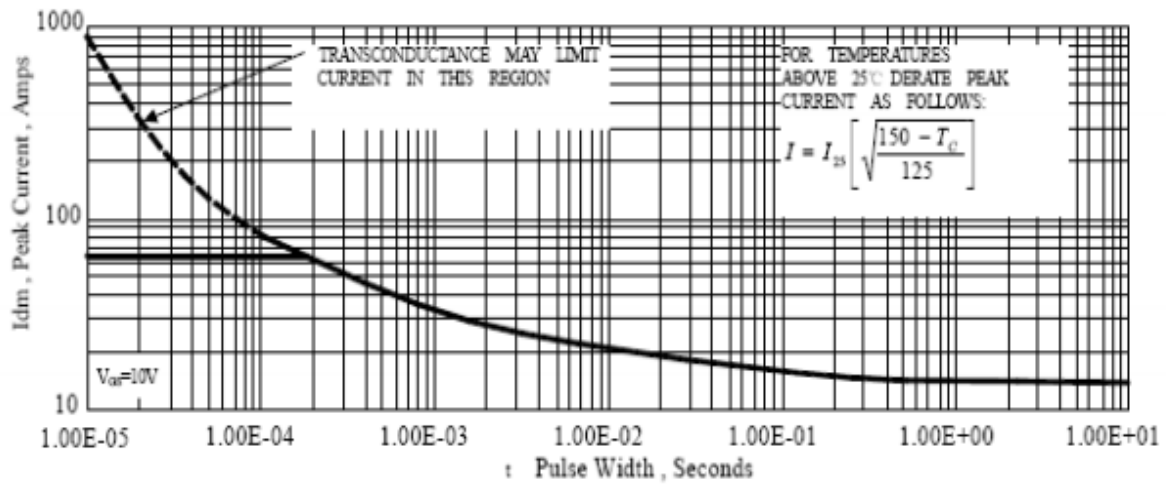
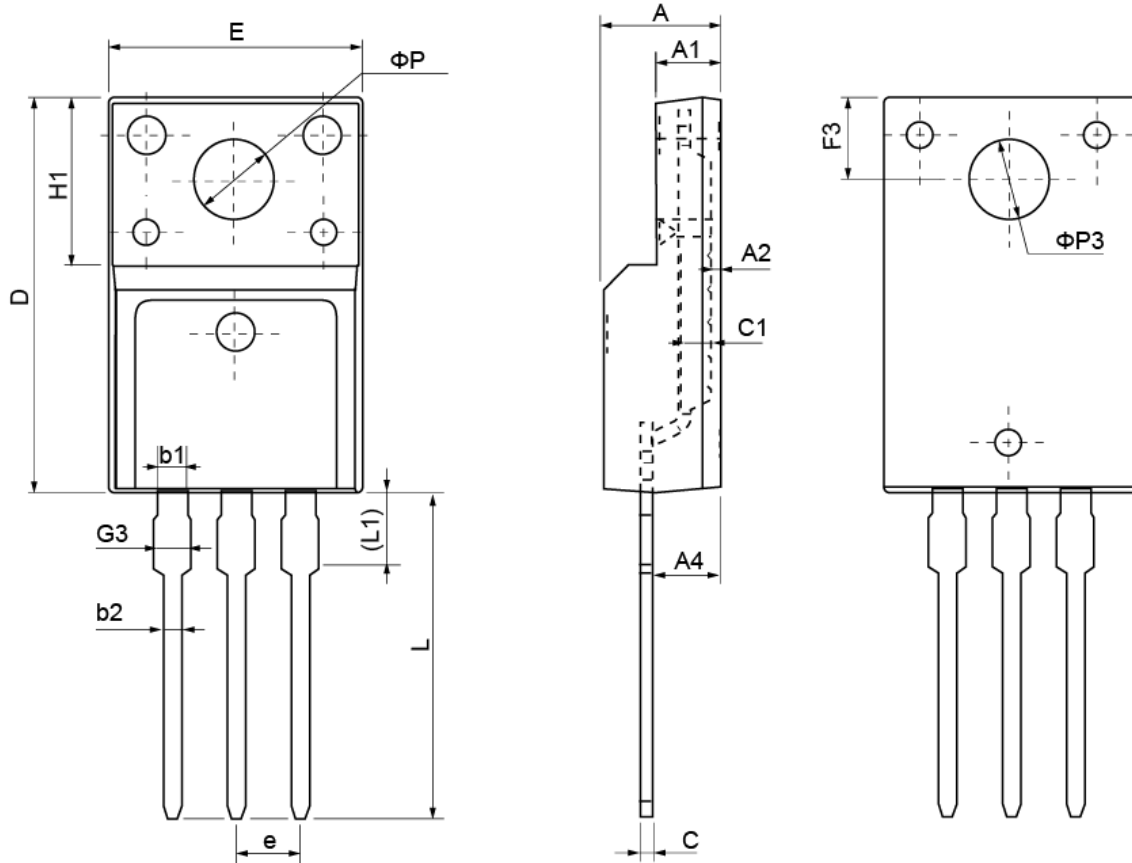


Figure 5 Maximum Effective Thermal Impedance, Junction to Case



TO-220F Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	4.40	4.70	5.00	H1	6.70 REF		
A1	2.30	2.55	2.80	L	12.30	12.98	13.30
A2	0.30	0.50	0.70	L1	2.95	3.10	3.50
A4	2.45	2.80	3.05	phi P	3.03	3.20	3.50
c	0.30	0.50	0.70	phi P3	3.15	3.45	3.65
c1	1.20	1.30	1.40	b1	1.10	1.30	1.45
D	15.40	15.90	16.40	b2	0.60	0.80	1.00
E	9.86	10.16	10.46	F3	3.05	3.30	3.55
e	2.54 BSC			G3	1.15	1.35	1.55