

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
1500V	7.5Ω@10V	3A

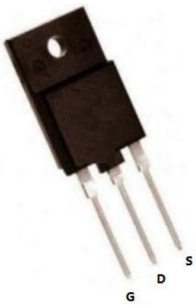
Feature

- High speed switching
- Intrinsic capacitances and Qg minimized

Application

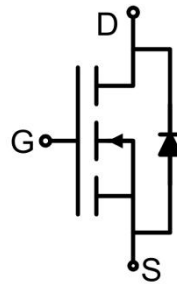
- Switched applications

Package

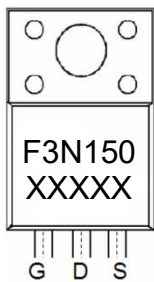


TO-3PF

Circuit diagram



Marking



Absolute maximum ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	1500	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current($T_C=25^\circ\text{C}$)	I_D	3	A
Continuous Drain Current($T_C=100^\circ\text{C}$)	$I_{D(100^\circ\text{C})}$	2.1	A
Pulsed Drain Current ¹⁾	I_{DM}	9	A
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	88	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.7	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy ²⁾	E_{AS}	225	mJ
Single pulse avalanche current ²⁾	I_{AS}	3	A
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +175	$^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 1\text{mA}$	1500			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 1500V, V_{GS} = 0V, T_C = 25^\circ\text{C}$			1.0	μA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 1500V, V_{GS} = 0V, T_C = 125^\circ\text{C}$			100	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	3	4	5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1.5A$		5.5	7.5	Ω
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS} = 40V, V_{GS} = 0V, f = 1\text{MHz}$		1700		pF
Output Capacitance	C_{oss}			61		
Reverse Transfer Capacitance	C_{rss}			5.5		
Total Gate Charge	Q_g	$V_{DS} = 1200V, V_{GS} = 10V, I_D = 1.5A$		32		nC
Gate-Source Charge	Q_{gs}			8.7		
Gate-Drain Charge	Q_{gd}			12		
Gate resistance	R_G	$f = 1\text{MHz}$ open drain		2		Ω
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 750V, V_{GS} = 10V, R_G = 3\Omega, I_D = 1.5A$		22		nS
Turn-on rise time	t_r			45		
Turn-off delay time	$t_{d(off)}$			42		
Turn-off fall time	t_f			58		
Source-Drain Diode characteristics						
Source-drain current	I_{SD}	$T_C = 25^\circ\text{C}$			3	A
Pulsed Source-drain current	I_{SDM}	$T_C = 25^\circ\text{C}$			9	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 3A$			1.1	V
Reverse Recovery Time	t_{rr}	$I_F = 3A, di/dt = 100A/\mu\text{s}$		390		nS
Reverse Recovery Charge	Q_{rr}			2.2		μC
Peak Reverse Recovery Current	I_{rrm}			11		A

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature
- 2) $T_J = 25^\circ\text{C}, V_{DD} = 50V, V_G = 10V, R_G = 25\Omega$
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1. Safe operating area

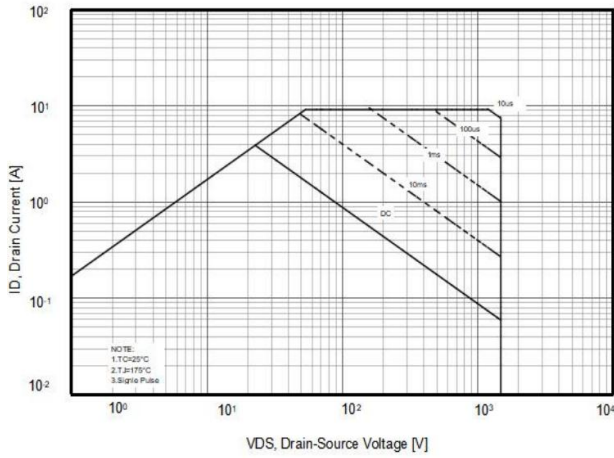


Figure2. Source-Drain Diode Forward Voltage

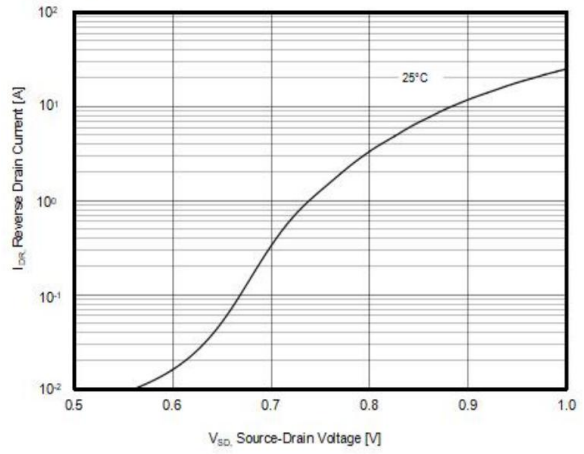


Figure3. RDS(ON) vs Junction Temperature

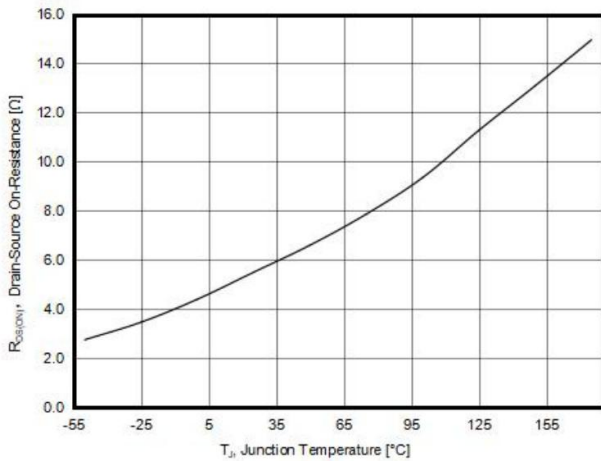


Figure4. BVDS vs Junction Temperature

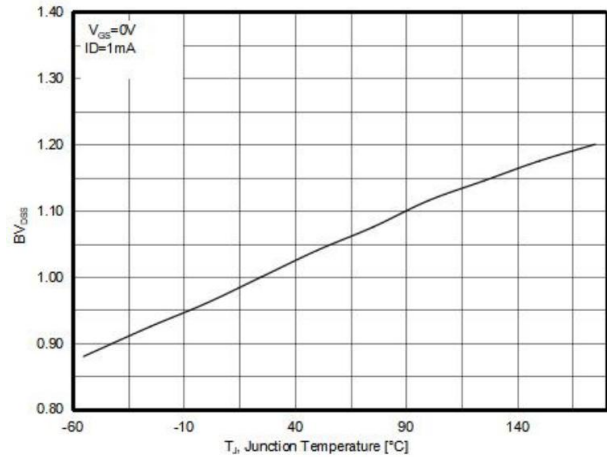


Figure5. Maximum ID vs Junction Temperature

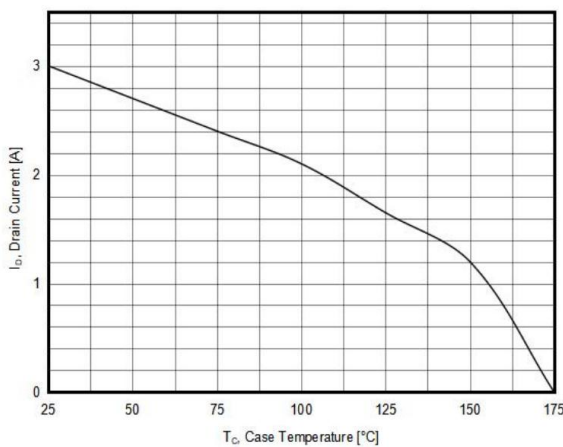
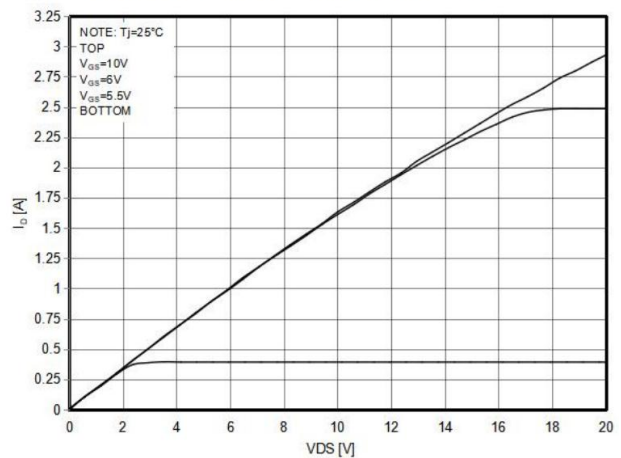


Figure6. Output characteristics



Typical Characteristics

Figure7. Capacitance

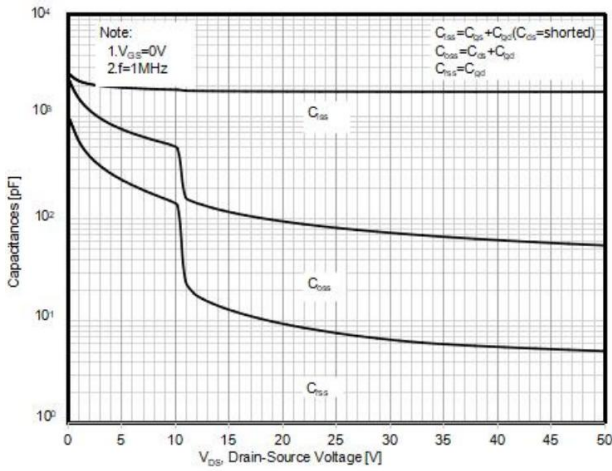


Figure8. Transfer characteristics

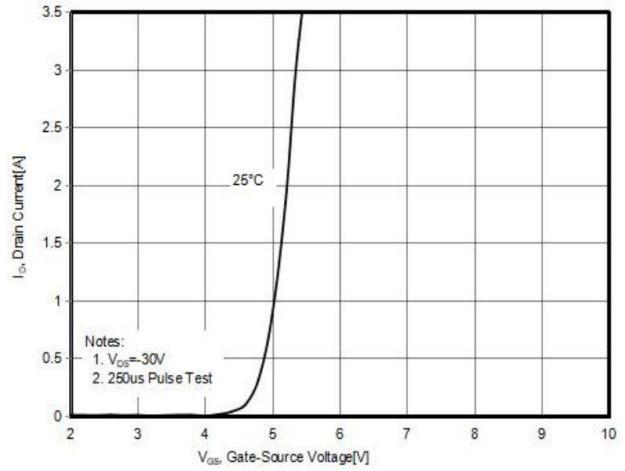


Figure9. Static drain-source on resistance

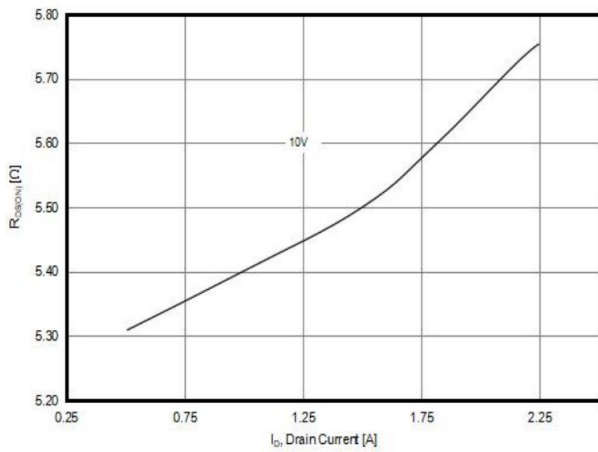
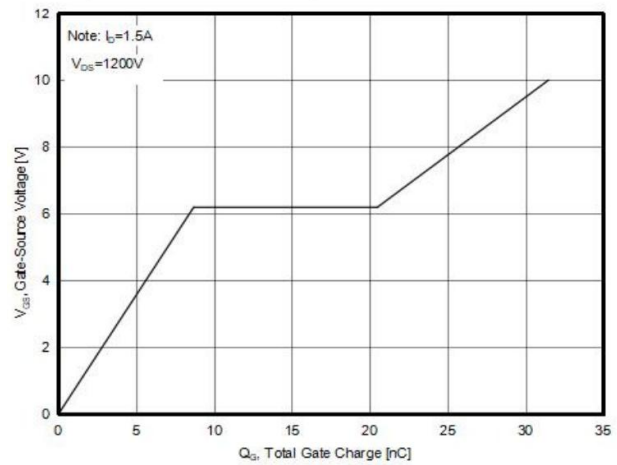
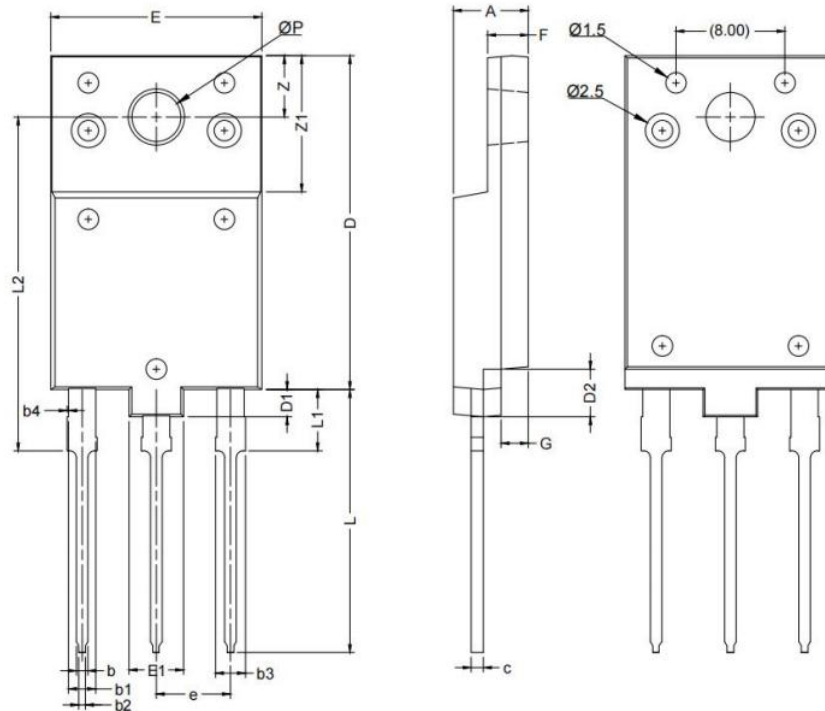


Figure10. Gate charge waveforms



TO-3PF Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.300	5.700	0.209	0.224
b	0.650	0.950	0.026	0.037
b4	0.000	0.200	0.000	0.008
C	0.800	1.000	0.031	0.039
D	24.200	24.800	0.953	0.976
D1	1.800	2.200	0.071	0.087
D2	3.300	3.700	0.130	0.146
E	15.300	15.700	0.602	0.618
E1	3.800	4.200	0.150	0.165
F	2.800	3.200	0.110	0.126
e	5.450 BSC		0.215 BSC	
L	19.000	19.600	0.748	0.772
L1	4.200	4.800	0.165	0.189
L2	24.200	24.800	0.953	0.976
P	3.400	3.800	0.134	0.150
Z	4.300	4.700	0.169	0.185
Z1	9.700	10.300	0.382	0.406
G	1.800	2.200	0.071	0.087
S	3.100	3.500	0.122	0.138