

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
800V	$0.8\Omega@10V$	10A

Feature

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- 100% Single Pulse avalanche energy Test

Applications

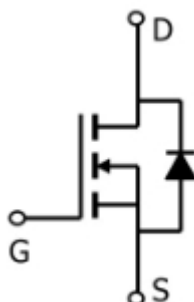
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

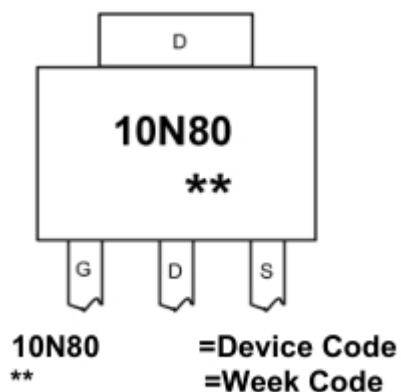


TO-220F(G:1 D:2 S:3)

Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	800	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current1 (T _C = 25°C)	I _D	10	W
Pulsed Drain Current	I _{DM}	40	A
Single Pulse Avalanche Energy	E _{AS}	807	mJ
Power Dissipation (T _C = 25°C)	P _D	60	W
Thermal Resistance Junction- Case	R _{θJC}	2.08	°C/ W
Storage Temperature Range	T _{STG}	-55~ +150	°C
Operating Junction Temperature Range	T _J	-55~ +150	°C

Electrical characteristics

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	800			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 640V, V_{GS} = 0V, T_J = 25^{\circ}C$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	3	4	5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6A$		0.8	1	Ω
Dynamic characteristics ⁴						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		2931		pF
Output Capacitance	C_{oss}			217		
Reverse Transfer Capacitance	C_{rss}			25		
Switching Characteristics						
Total Gate Charge(4.5V)	Q_g	$V_{DS} = 640V, V_{GS} = 10V, I_D = 10A$		64		nC
Gate-Source Charge	Q_{gS}			13		
Gate-Drain Charge	Q_{gd}			24		
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 400V, V_{GS} = 10V, R_G = 4.7\Omega, I_D = 10A$		19		nS
Rise Time	T_r			10		
Turn-Off Delay Time	$T_{d(off)}$			68		
Fall Time	T_f			23		

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 EAS data shows Max. rating . The test condition is $R_G = 30\Omega, L = 10mH$

Typical Characteristics

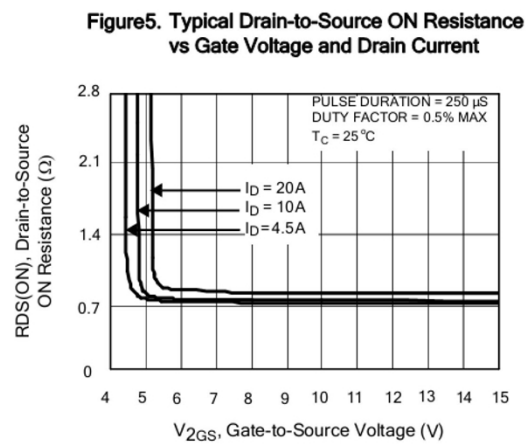
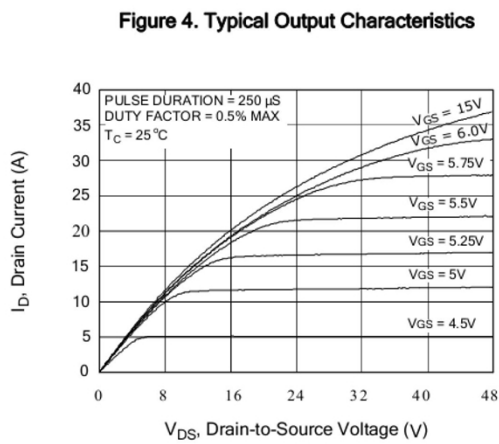
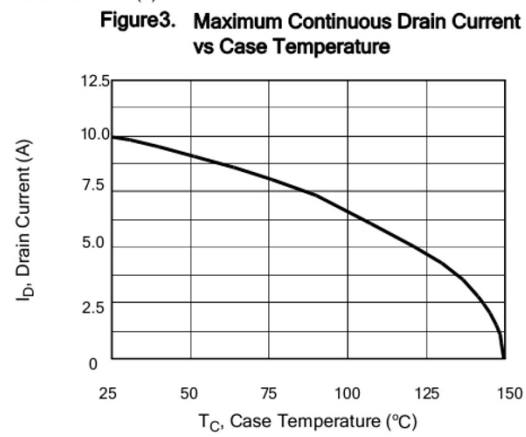
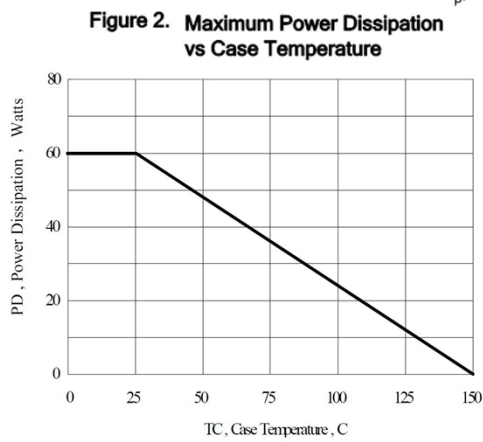
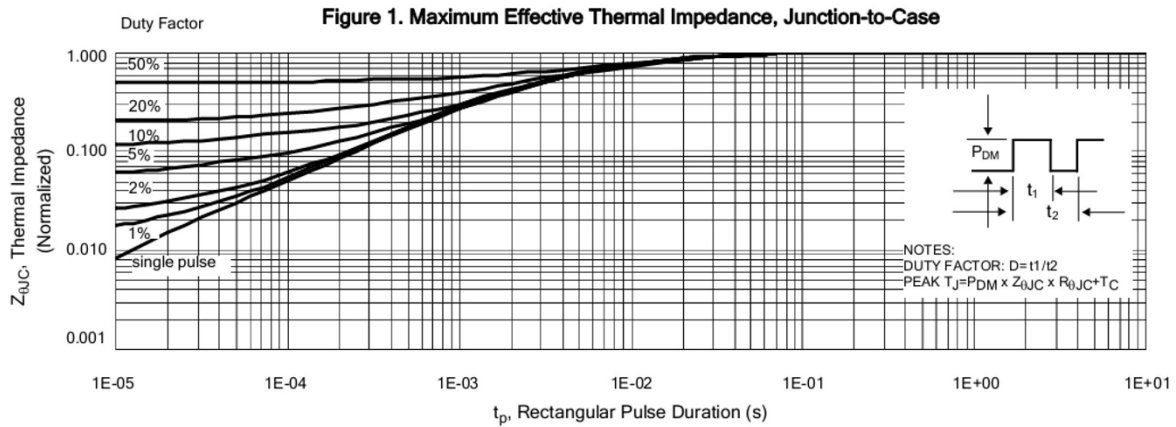


Figure 6. Maximum Peak Current Capability

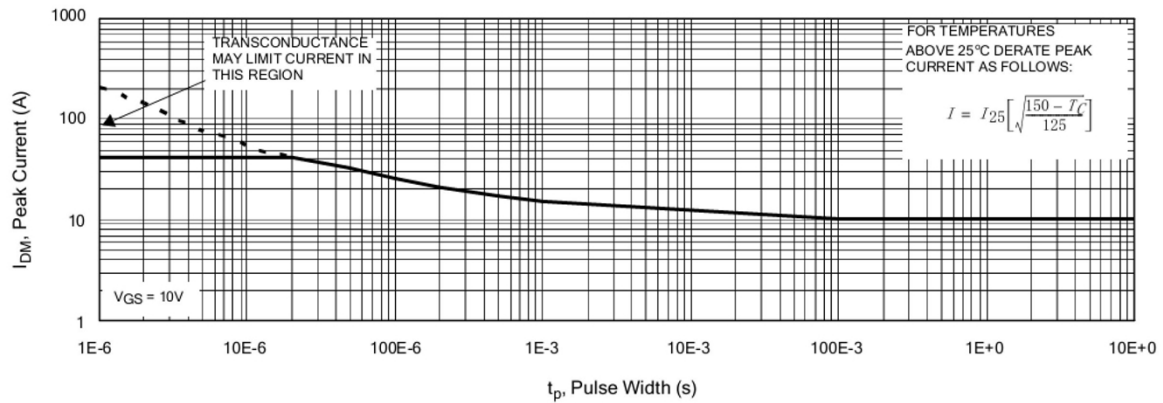


Figure 7. Typical Transfer Characteristics

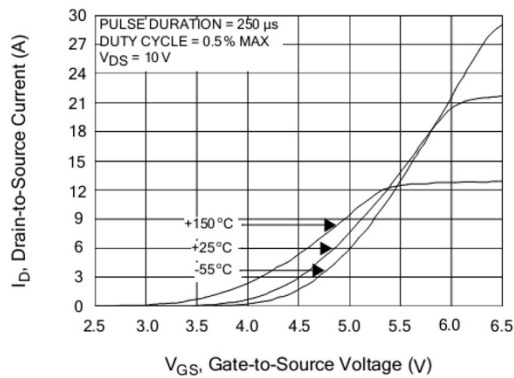


Figure 8. Unclamped Inductive Switching Capability

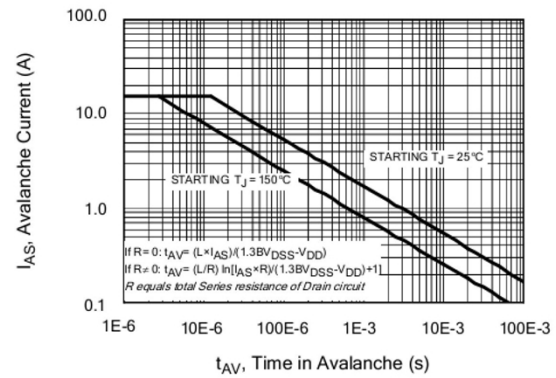


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

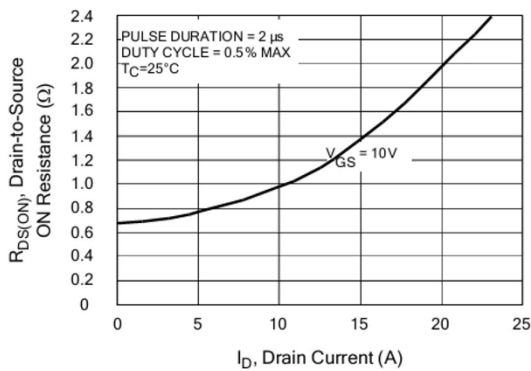


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

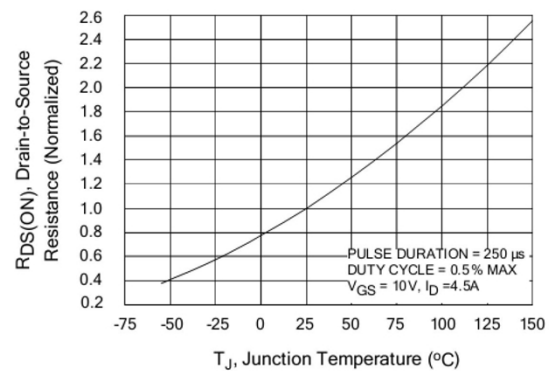


Figure 11. Typical Breakdown Voltage vs Junction Temperature

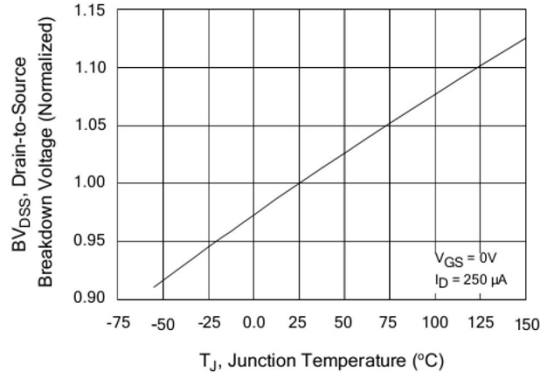


Figure 12. Typical Threshold Voltage vs Junction Temperature

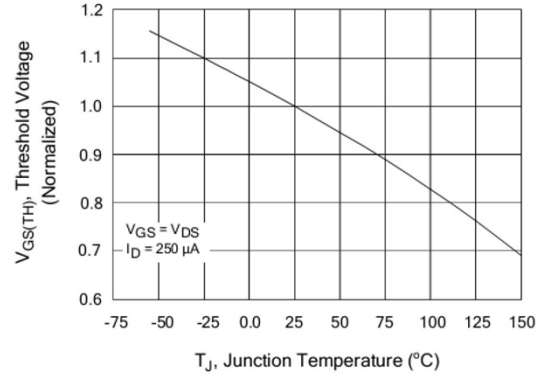


Figure 13. Maximum Forward Bias Safe Operating Area

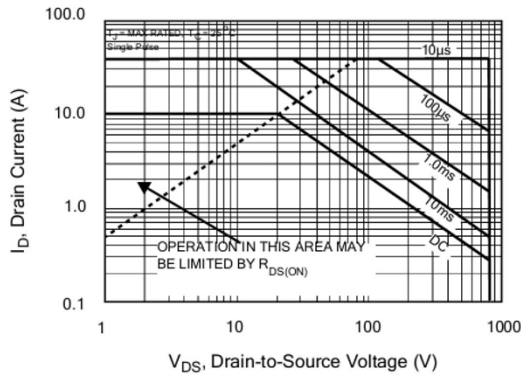


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

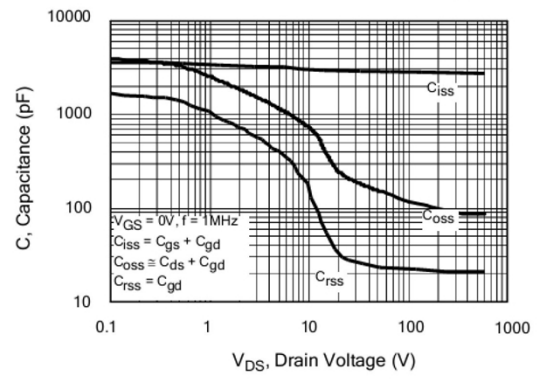


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

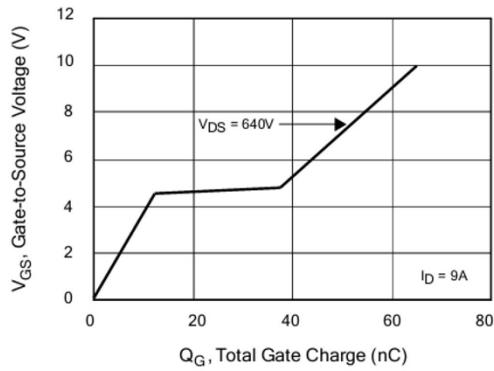
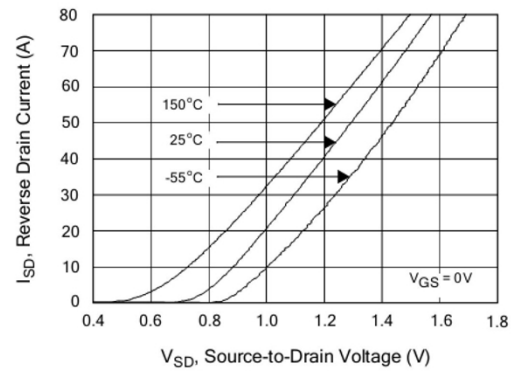
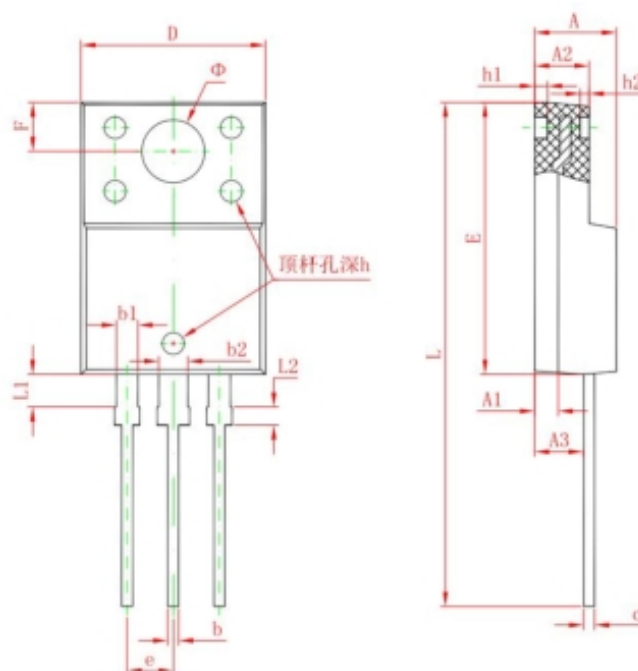


Figure 16. Typical Body Diode Transfer Characteristics



TO-220F Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.300	4.700
A1	1.300 REF.	
A2	2.800	3.200
A3	2.500	2.900
b	0.500	0.750
b1	1.100	1.350
b2	1.500	1.750
c	0.500	0.750
D	9.960	10.360
E	14.800	15.200
e	2.540 TYP.	
F	2.700 REF.	
Φ	3.500 REF.	
h	0.000	0.300
h1	0.800 REF.	
h2	0.500 REF.	
L	28.000	28.400
L1	1.700	1.900
L2	0.900	1.100