

## N-Channel Enhancement Mode MOSFET

### Features

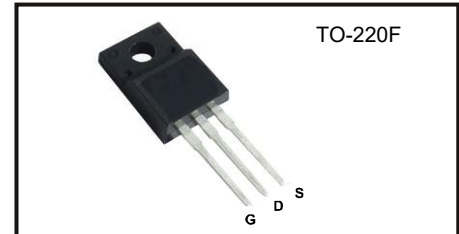
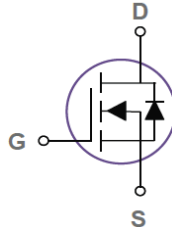
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

### Applications

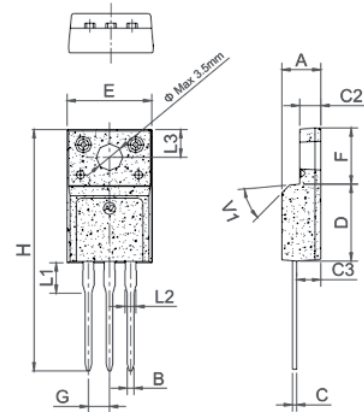
- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction(PFC)

Preliminary

$V_{DSS}$	1200V
$I_{D(@25^{\circ}C)}$	5A
$R_{DS(ON) \text{ max.}}$	3.2 $\Omega$



Package Dimensions



### Absolute Maximum Ratings

(Tc = 25°C unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	$V_{DS}$	1200	V
Gate Source Voltage	$V_{GS}$	$\pm 30$	V
Drain Current Continuous @ Tc = 25°C	$I_D$	5	A
Drain Current Pulsed <sup>Note2</sup>	$I_{DM}$	20	A
Single Pulse Avalanche Energy	$E_{AS}$	150	mJ
Power Dissipation @ Tc= 25°C	$P_D$	350	W
Storage Temperature Range	$T_{STG}$	-55 to +150	°C
Operating Junction Temperature Range	$T_J$	-55to +150	°C
Thermal Resistance Junction to Case	$R_{\theta Jc}$	0.6	°C/W

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

Note : 1. Repetitive rating pulse width limited by maximum junction temperature  
 2. Repetitive rating : pulse width limited by junction temperature.

## Electrical Characteristics @ T<sub>c</sub> =25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OFF Characteristics</b>						
Drain-Source Breakdown Voltage	<b>BV<sub>DSS</sub></b>	<b>V<sub>GS</sub>=0V , I<sub>D</sub>=0.25mA</b>	<b>1200</b>	-	-	<b>V</b>
Drain-Source Leakage Current	<b>I<sub>DSS</sub></b>	<b>V<sub>GS</sub>=0V , V<sub>DS</sub>=1200V</b>	-	-	<b>5</b>	<b>μA</b>
Gate To Source Leakage Current	<b>I<sub>GSS</sub></b>	<b>V<sub>GS</sub>=±30V , V<sub>DS</sub>=0V</b>	-	-	<b>±100</b>	<b>nA</b>
<b>ON Characteristics ( Pulse Width &lt; 380μs, Duty Cycle &lt; 2%.)</b>						
Gate Threshold Voltage	<b>V<sub>GS(th)</sub></b>	<b>V<sub>DS</sub>=V<sub>GS</sub> , I<sub>D</sub>=0.25mA</b>	<b>3.0</b>	<b>4.0</b>	<b>5.0</b>	<b>V</b>
Drain-Source On-State Resistance	<b>R<sub>DS(on)</sub></b>	<b>V<sub>GS</sub>=10V , I<sub>D</sub>=1.5A</b>	-	<b>2.6</b>	<b>3.2</b>	<b>Ω</b>
<b>Dynamic Characteristics</b>						
Input Capacitance	<b>C<sub>iss</sub></b>	<b>V<sub>DS</sub>=25V</b>	-	<b>1206</b>	-	<b>pF</b>
Output Capacitance	<b>C<sub>oss</sub></b>	<b>V<sub>GS</sub>=0V</b>	-	<b>103</b>	-	
Reverse Transfer Capacitance	<b>C<sub>rss</sub></b>	<b>Freq.=1MHz</b>	-	<b>22.3</b>	-	
<b>Switching Characteristics</b>						
Turn-On Delay Time	<b>t<sub>d(on)</sub></b>	<b>V<sub>DD</sub>=600V I<sub>D</sub>=3A R<sub>G</sub>=10Ω</b>	-	<b>23.6</b>	-	<b>ns</b>
Rise Time	<b>t<sub>r</sub></b>		-	<b>8.6</b>	-	
Turn-Off Delay Time	<b>t<sub>d(off)</sub></b>		-	<b>50.8</b>	-	
Fall Time	<b>t<sub>f</sub></b>		-	<b>18</b>	-	
Total Gate Charge	<b>Q<sub>g</sub></b>	<b>V<sub>DS</sub>=960V</b>	-	<b>39</b>	-	<b>nC</b>
Gate to Source Charge	<b>Q<sub>gs</sub></b>	<b>V<sub>GS</sub>=10V</b>	-	<b>7.5</b>	-	
Gate to Drain Charge	<b>Q<sub>gd</sub></b>	<b>I<sub>DS</sub>=3A</b>	-	<b>23.4</b>	-	
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage	<b>V<sub>SD</sub></b>	<b>V<sub>GS</sub>=0V , I<sub>S</sub>=3A</b>	-	-	<b>1.6</b>	<b>V</b>
Continuous Source Current (Body Diode)	<b>I<sub>SD</sub></b>		-	-	<b>5</b>	<b>A</b>
Max. Pulsed Current (Body Diode)	<b>I<sub>SM</sub></b>		-	-	<b>20</b>	<b>A</b>
Reverse Recovery Time	<b>T<sub>rr</sub></b>	<b>I<sub>S</sub>=3A</b>	-	<b>526</b>	-	<b>ns</b>
Reverse Recovery Charge	<b>Q<sub>rr</sub></b>	<b>di<sub>f</sub>/dt=100A/μs</b>	-	<b>2</b>	-	<b>μC</b>

Note : 3. I<sub>SD</sub> = 6A, di<sub>f</sub>/dt ≤ 200A/μs, V<sub>DD</sub> ≤ BV<sub>DSS</sub>, Start T<sub>J</sub> =25°C

**Typical Performance Characteristics**

Figure 1. Output Characteristics

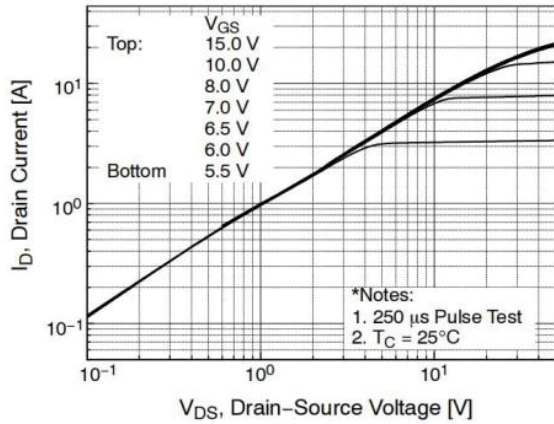


Figure 2. Transfer Characteristics

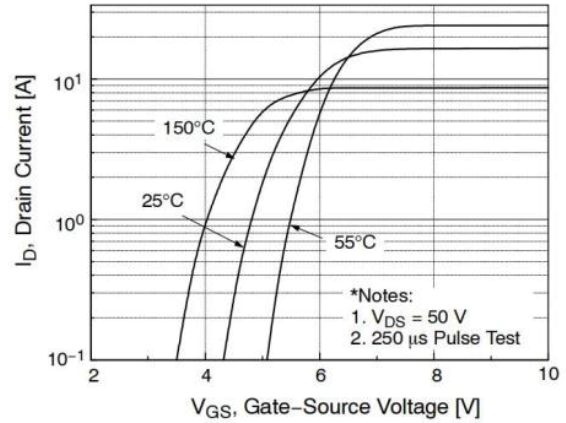


Figure 3. Drain-to-Source On Resistance vs Drain Current

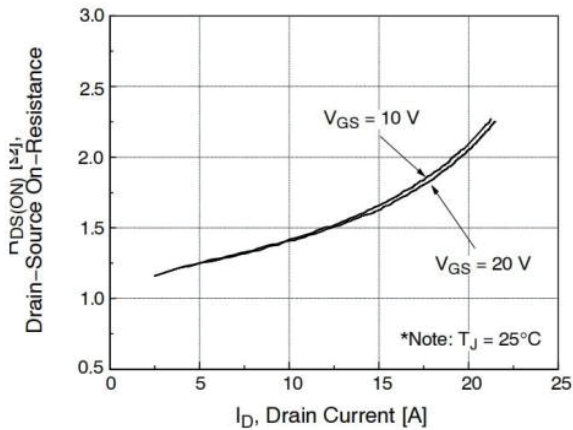


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

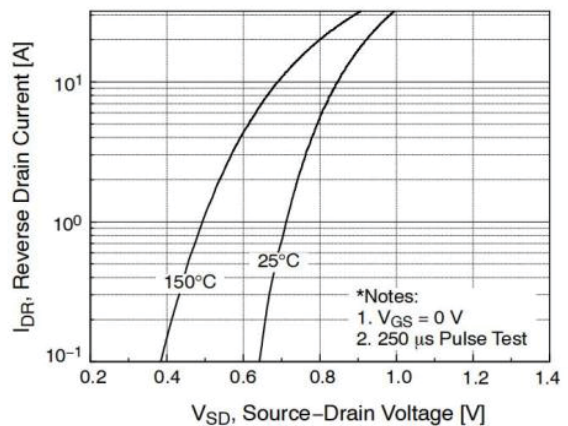


Figure 5. Gate Charge Characteristics

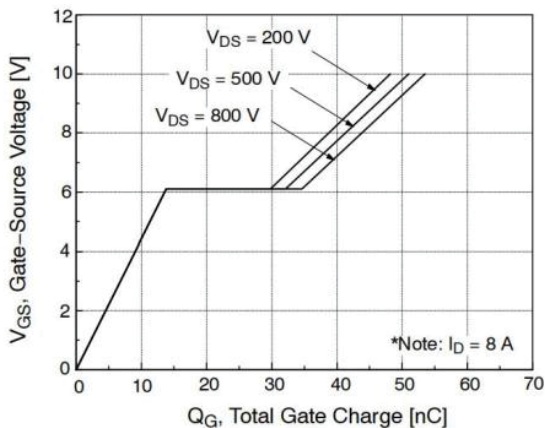
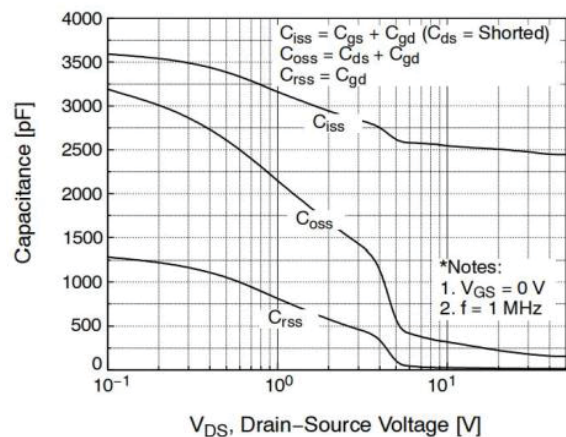


Figure 6. Capacitance Characteristic



**Typical Performance Characteristics**

Figure 7. Normalized Breakdown Voltage vs Junction Temperature

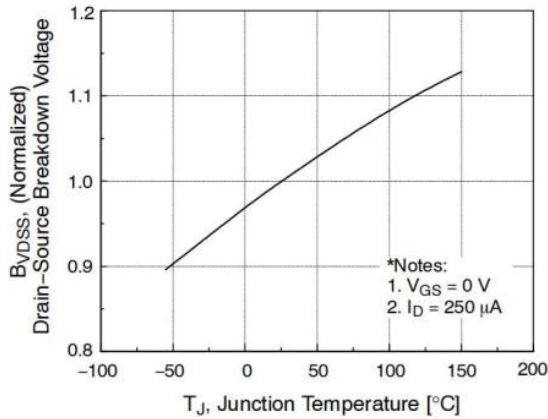


Figure 8. Normalized On Resistance vs Junction Temperature

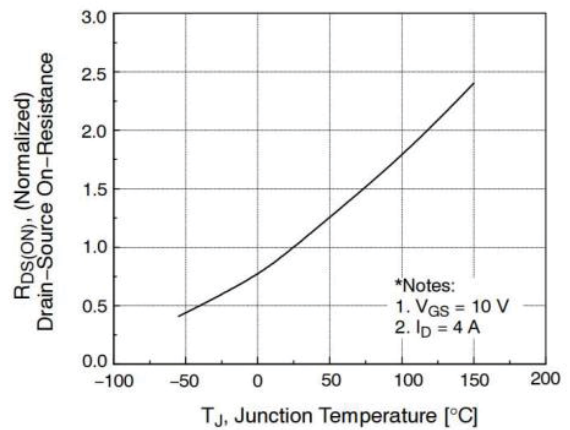


Figure 9. Maximum Continuous Drain Current vs Case Temperature

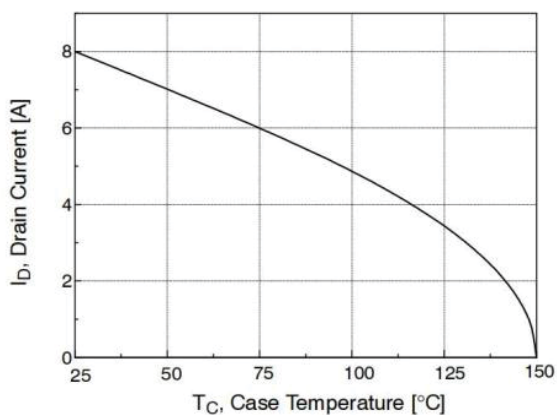


Figure 10. Maximum Safe Operating Area

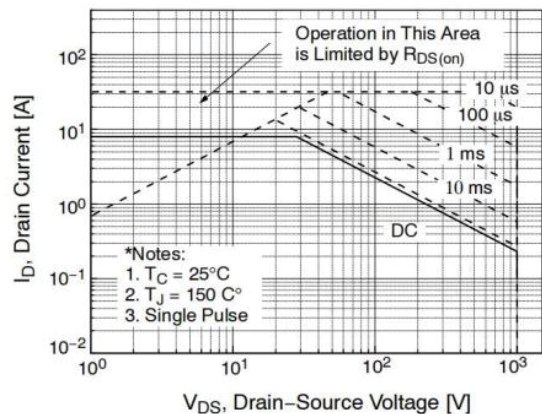
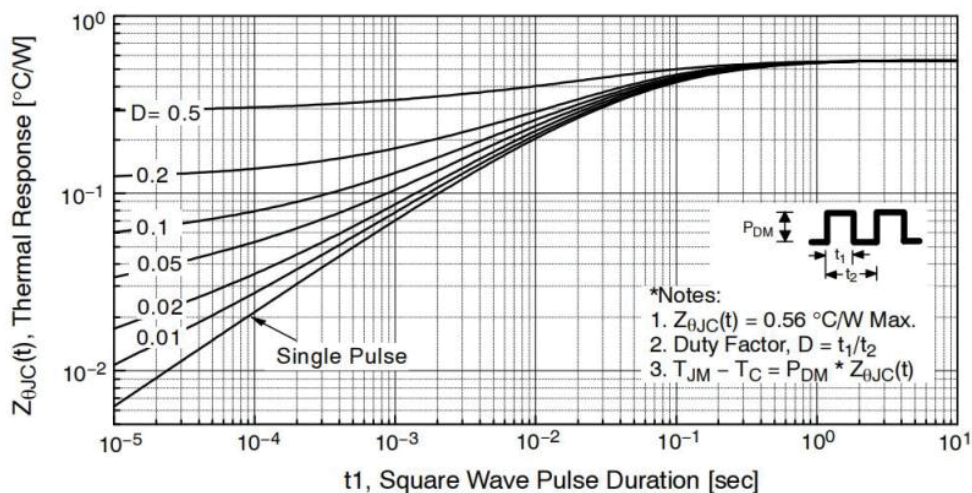


Figure 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case



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