

N-Channel Enhancement Mode MOSFET

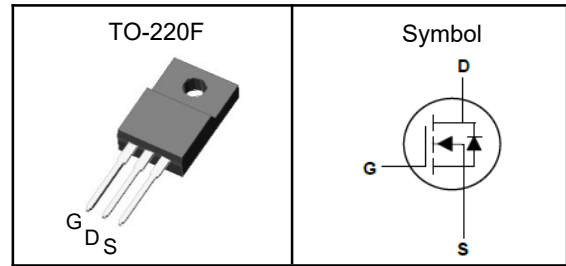
Features

- Advanced SGT technology
- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V_{DSS}	60	V
$R_{DS(ON)-Typ}$	3.0	m Ω
I_D	130	A

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit	
V_{DSS}	Drain-Source Voltage	60	V	
V_{GSS}	Gate-Source Voltage	± 20	V	
T_J	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
E_{AS}	Single Pulse Avalanche Energy	900	mJ	
$I_{DM}^{①}$	Pulse Drain Current Tested	520	A	
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	130	A
	Continuous Drain Current	$T_C=100^\circ\text{C}$	80	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	37	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	45	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.6	$^\circ\text{C}/\text{W}$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C .

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.



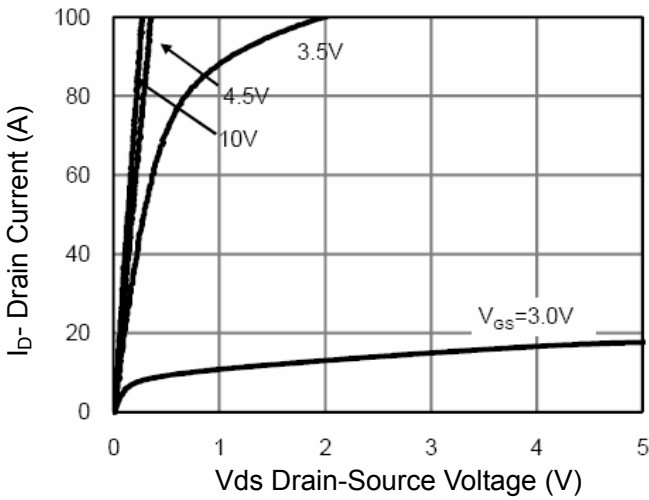
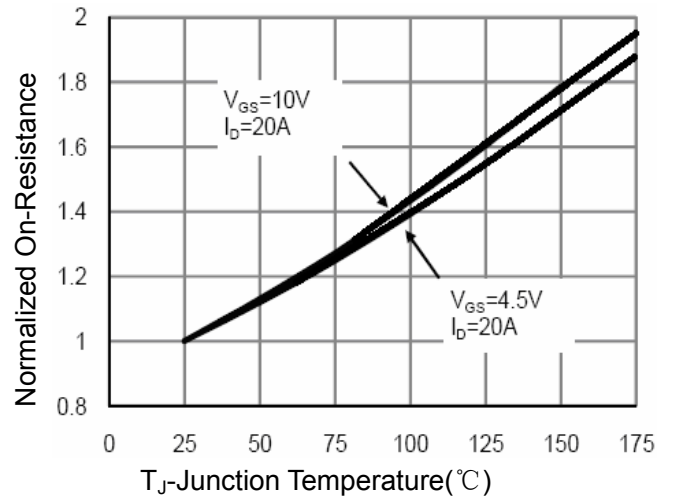
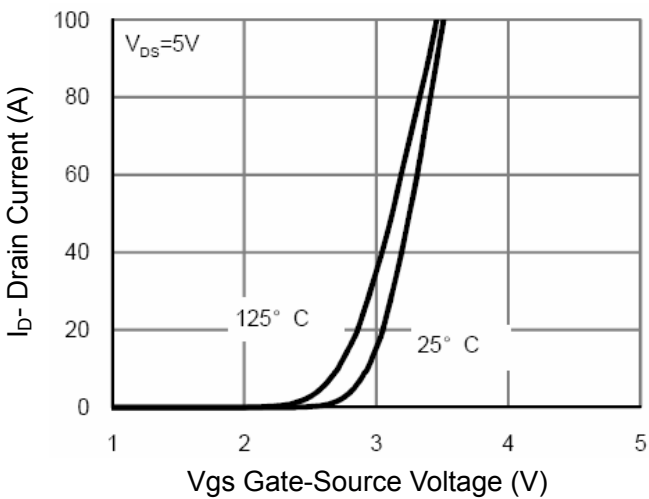
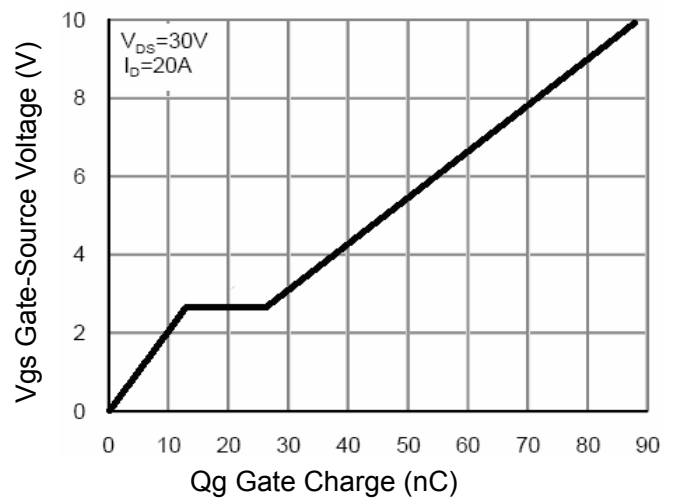
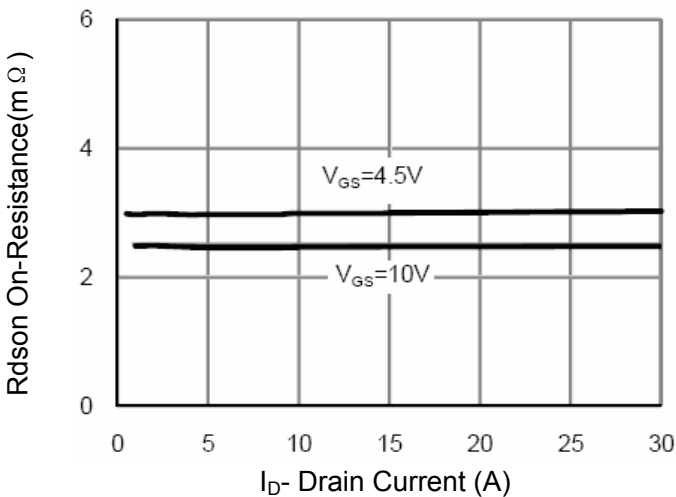
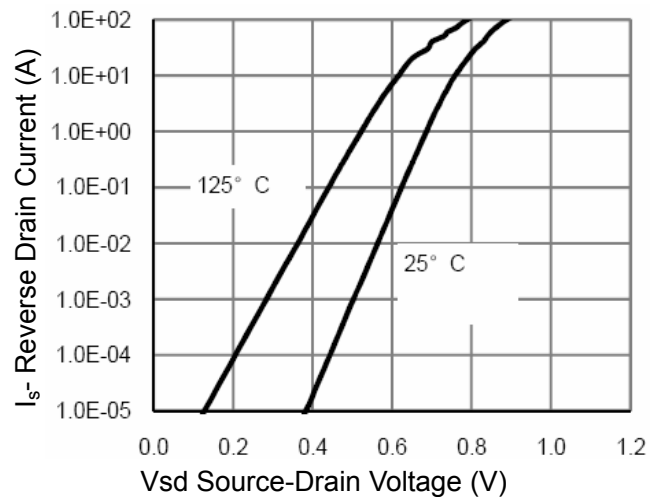
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Electrical Characteristics (T_J=25°C, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V	---	---	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	---	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
R _{DS(on)}	Drain-Source On-state Resistance	V _{GS} =10V, I _D =30A	---	3.0	3.5	mΩ
		V _{GS} =4.5V, I _D =20A	---	3.5	4.0	
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =20A	---	50	---	S
Dynamic Characteristics ^⑤						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Freq.=1.0MHz	---	4484	---	pF
C _{oss}	Output Capacitance		---	1726	---	
C _{rss}	Reverse Transfer Capacitance		---	55	---	
T _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DD} =30V, I _D =20A, R _G =4.7Ω	---	7	---	nS
T _r	Turn-on Rise Time		---	12	---	
T _{d(off)}	Turn-off Delay Time		---	25	---	
T _f	Turn-off Fall Time		---	4	---	
Q _g	Total Gate Charge	V _{GS} =10V, V _{DD} =30V, I _D =20A	---	88	---	nC
Q _{gs}	Gate-Source Charge		---	13	---	
Q _{gd}	Gate-Drain Charge		---	14	---	
Source-Drain Characteristics						
V _{SD}	Diode Forward Voltage	I _S =20A, V _{GS} =0V	---	---	1.2	V
t _{rr}	Reverse recovery time	I _F =20A, diF/dt=100A/μs	---	56	---	ns
Q _{rr}	Reverse recovery charge		---	80	---	nC

Note ④ : Pulse test (pulse width≤300us, duty cycles≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

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Typical Characteristics

Figure 1 Output Characteristics

Figure 4 Rdson-Junction Temperature

Figure 2 Transfer Characteristics

Figure 5 Gate Charge

Figure 3 Rdson- Drain Current

Figure 6 Source- Drain Diode Forward

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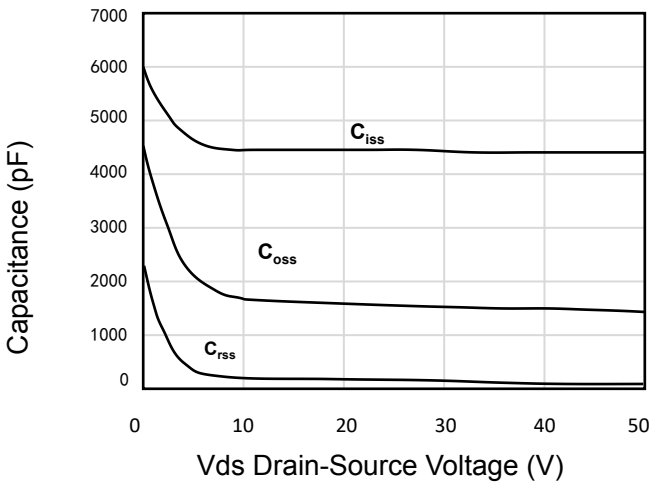


Figure 7 Capacitance vs Vds

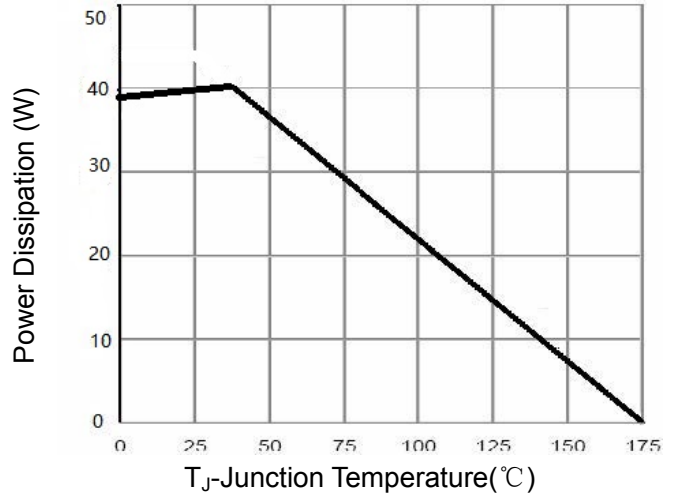


Figure 9 Power De-rating

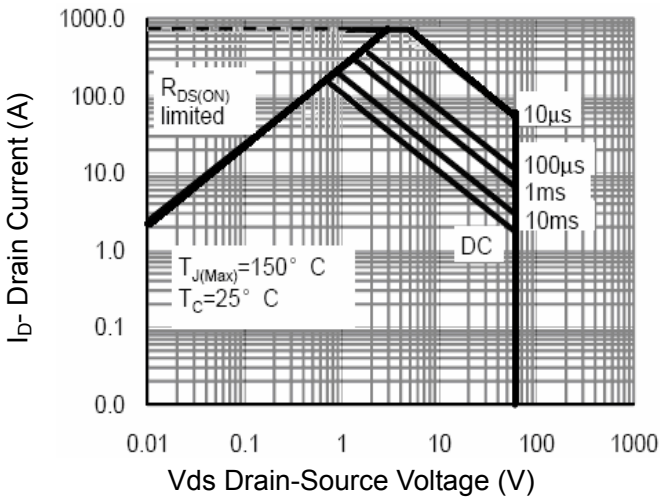


Figure 8 Safe Operation Area

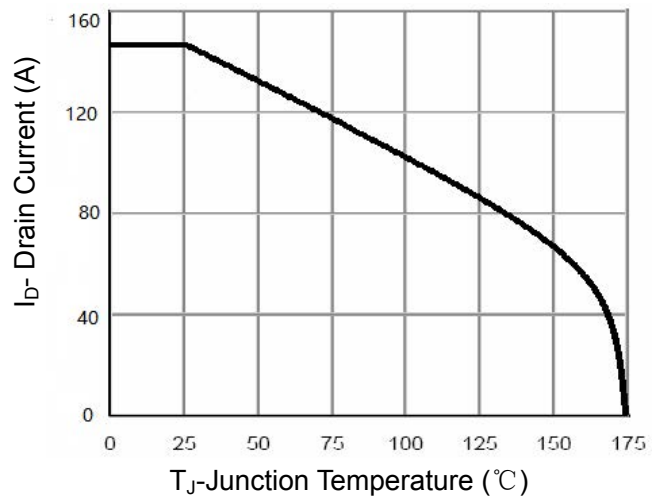


Figure 10 Current De-rating

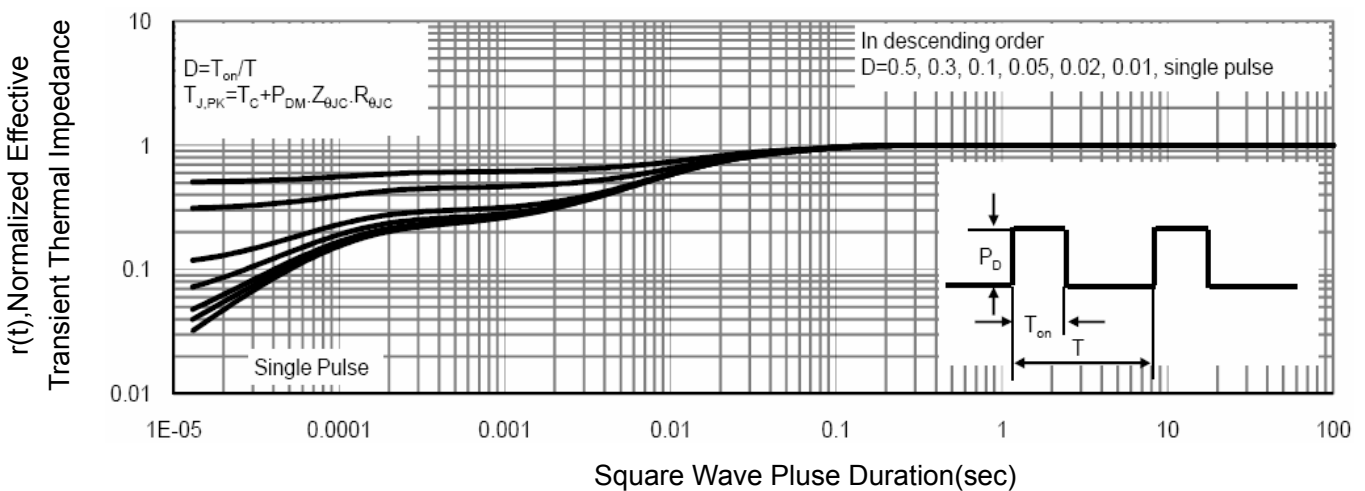
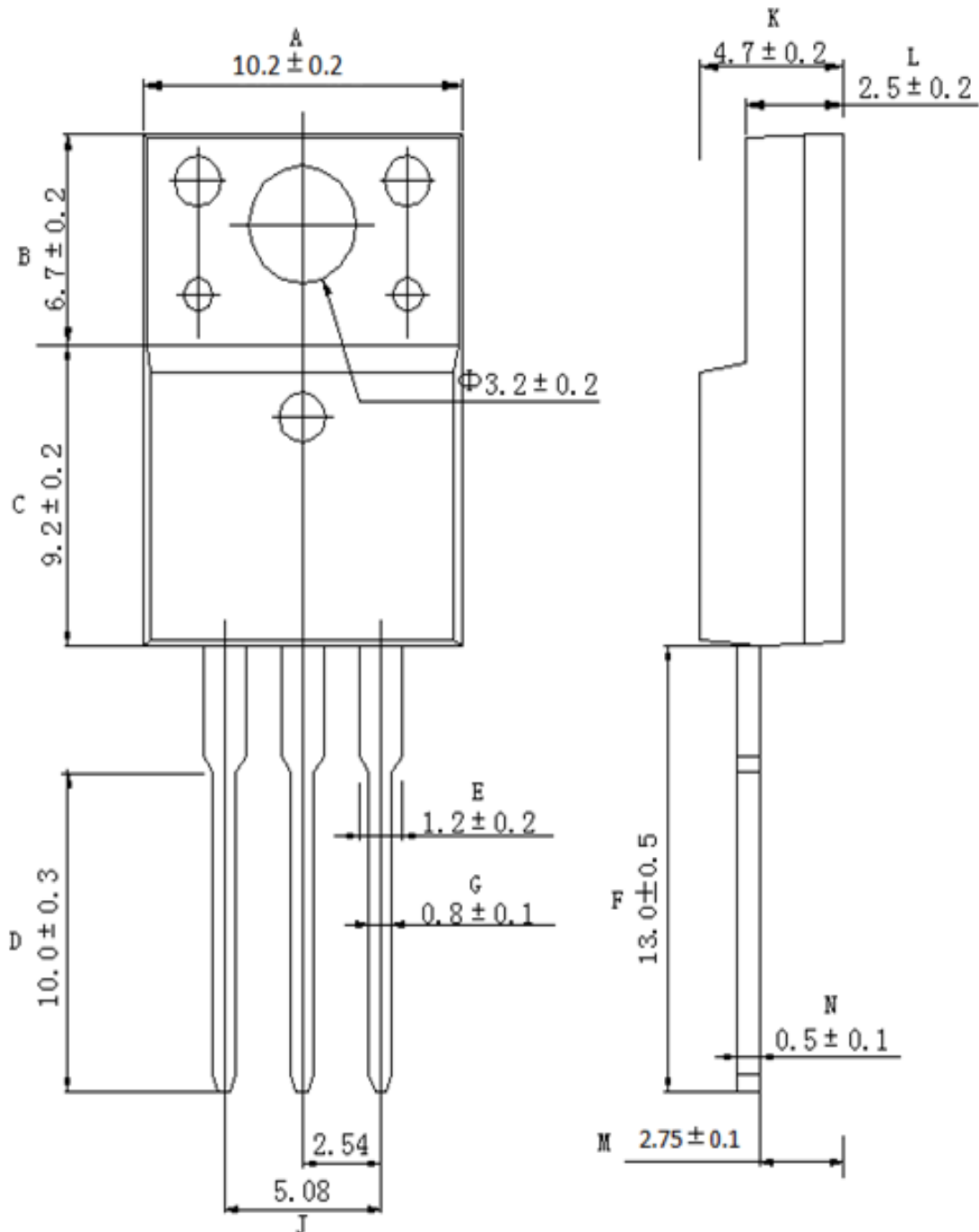


Figure 11 Normalized Maximum Transient Thermal Impedance

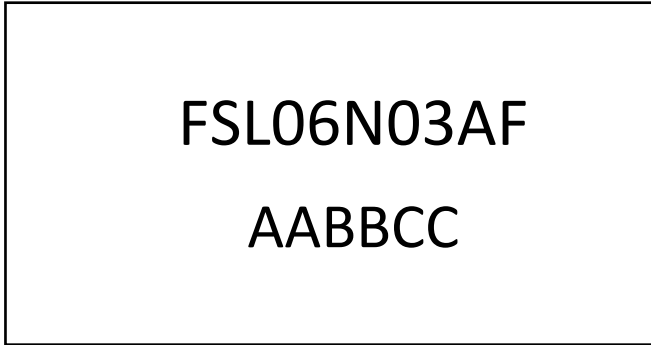
N-Channel Enhancement Mode MOSFET
TO-220F Package Outline Data




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印字说明

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第一行标记为物料型号代码

第二行为AA为内部识别码，BB为表示年份，例如22即表示2022年，CC表示周期，例如01即表示第一周；2201即表示2022年第一周生产。