



Features

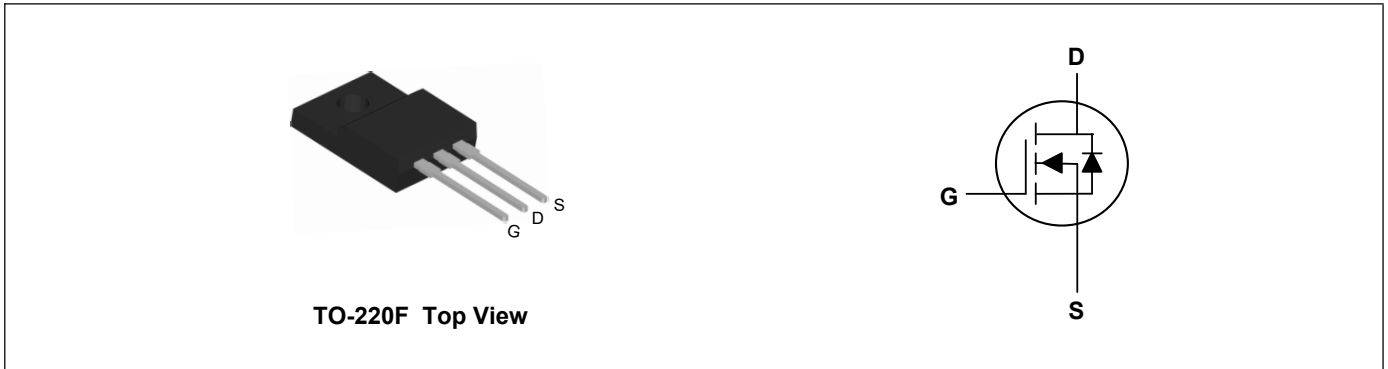
- Advanced Silicon's MOSFET Technology
- Fast switching
- Low Gate Charge
- 100% avalanche tested
- Green Device Available

Applications

- Low Power Drives SMPS
- DC/DC converter

Product Summary

V_{DS}	700	V
I_D	15	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	560	m Ω



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ¹	I_D	15	A
Pulsed Drain Current ²	I_{DM}	60	A
Single Pulse Avalanche Energy ³	E_{AS}	461	mJ
Avalanche Current	I_{AS}	9.6	A
Repetitive Avalanche Energy	E_{AR}	1.84	mJ
Total Power Dissipation ⁴	P_D	53	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	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	62.5	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	2.36	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	700	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =7.5A	---	460	560	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	3.0	---	4.0	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =700V, V _{GS} =0V, T _J =25°C	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	---	---	±100	nA
Total Gate Charge	Q _g	V _{DD} =560V, V _{GS} =10V, I _D =15A	---	62	---	nC
Gate-Source Charge	Q _{gs}		---	9	---	
Gate-Drain Charge	Q _{gd}		---	33	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =350V, R _G =5Ω, I _D =15A	---	16	---	ns
Rise Time	T _r		---	248	---	
Turn-Off Delay Time	T _{d(off)}		---	47	---	
Fall Time	T _f		---	18	---	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	2108	---	pF
Output Capacitance	C _{oss}		---	196	---	
Reverse Transfer Capacitance	C _{rss}		---	25	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S	T _C =25°C	---	---	15	A
Pulsed Source Current	I _{SM}		---	---	60	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =7.5A, T _J =25°C	---	---	1.0	V
Reverse Recovery Time	t _{rr}	I _F =15A, V _{GS} =0V di/dt=100A/μs, T _J =25°C	---	490	---	nS
Reverse Recovery Charge	Q _{rr}		---	7.02	---	nC

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 ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=10mH
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

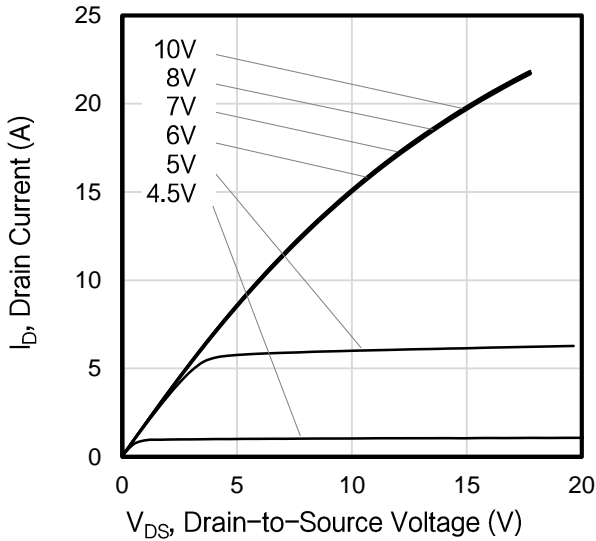


Figure 2. Body Diode Forward Voltage

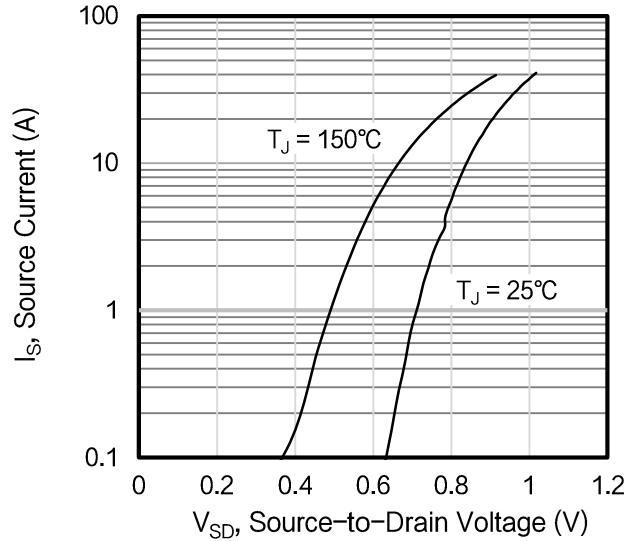


Figure 3. Drain Current vs. Temperature

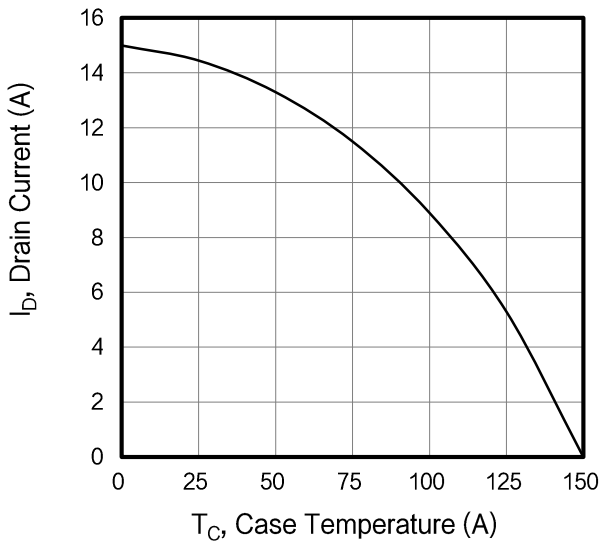


Figure 4. BV_{DSS} Variation vs. Temperature

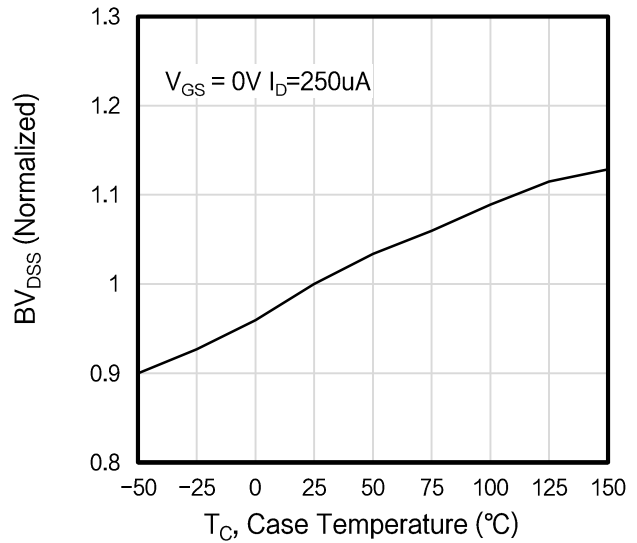


Figure 5. Transfer Characteristics

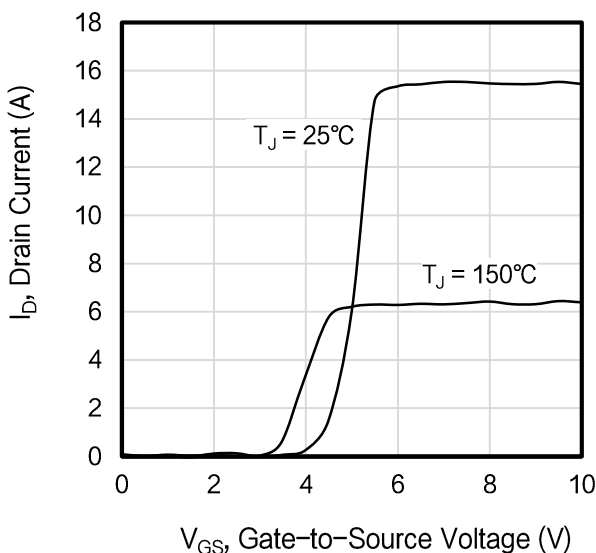


Figure 6. On-Resistance vs. Temperature

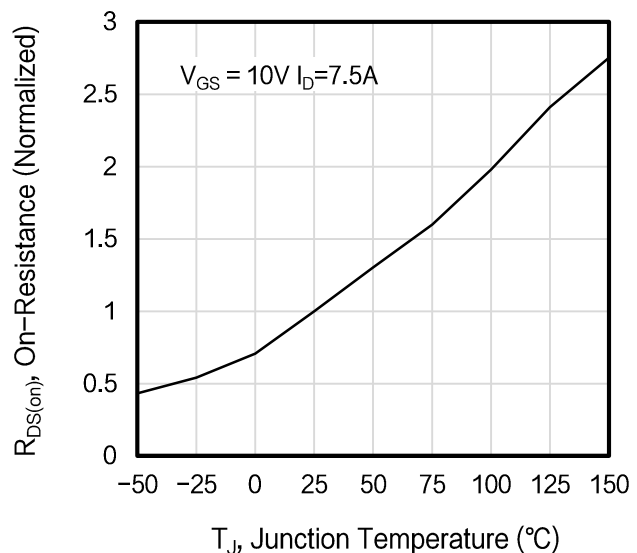


Figure 7. Capacitance

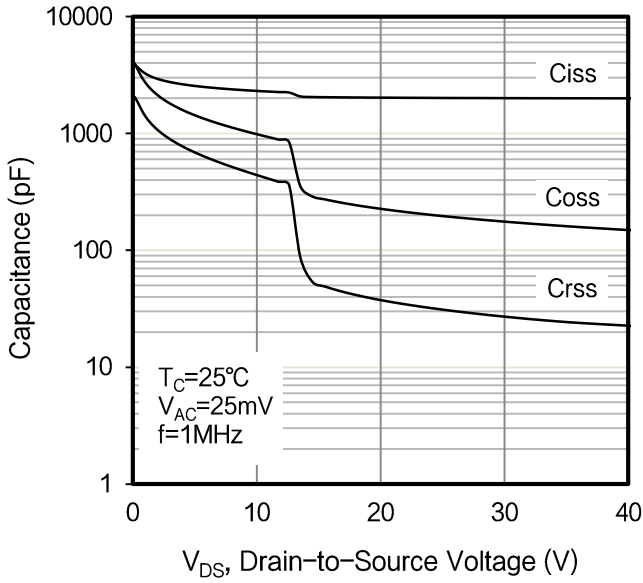


Figure 8. Gate Charge

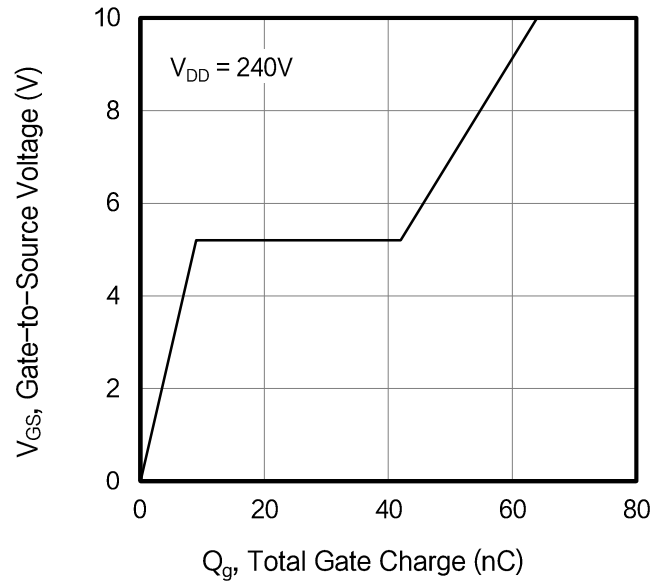


Fig.9 Threshold Voltage vs. Temperature

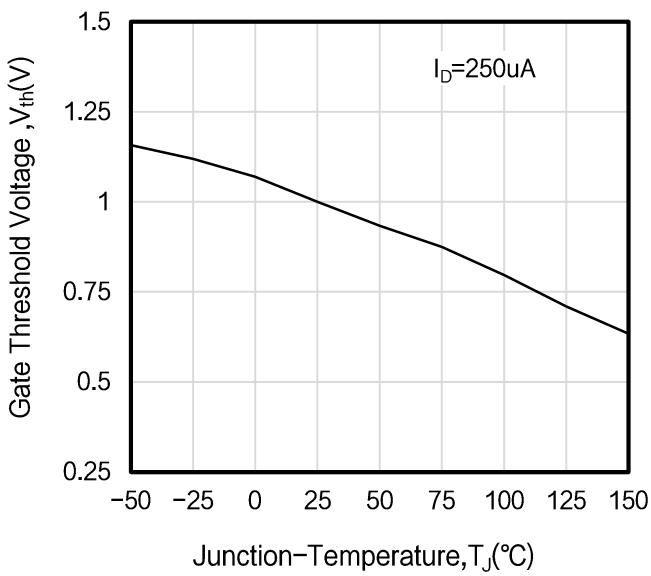
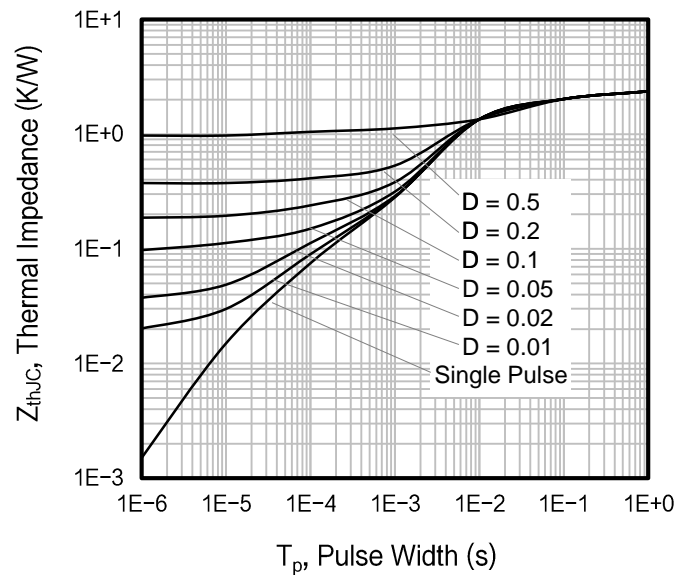
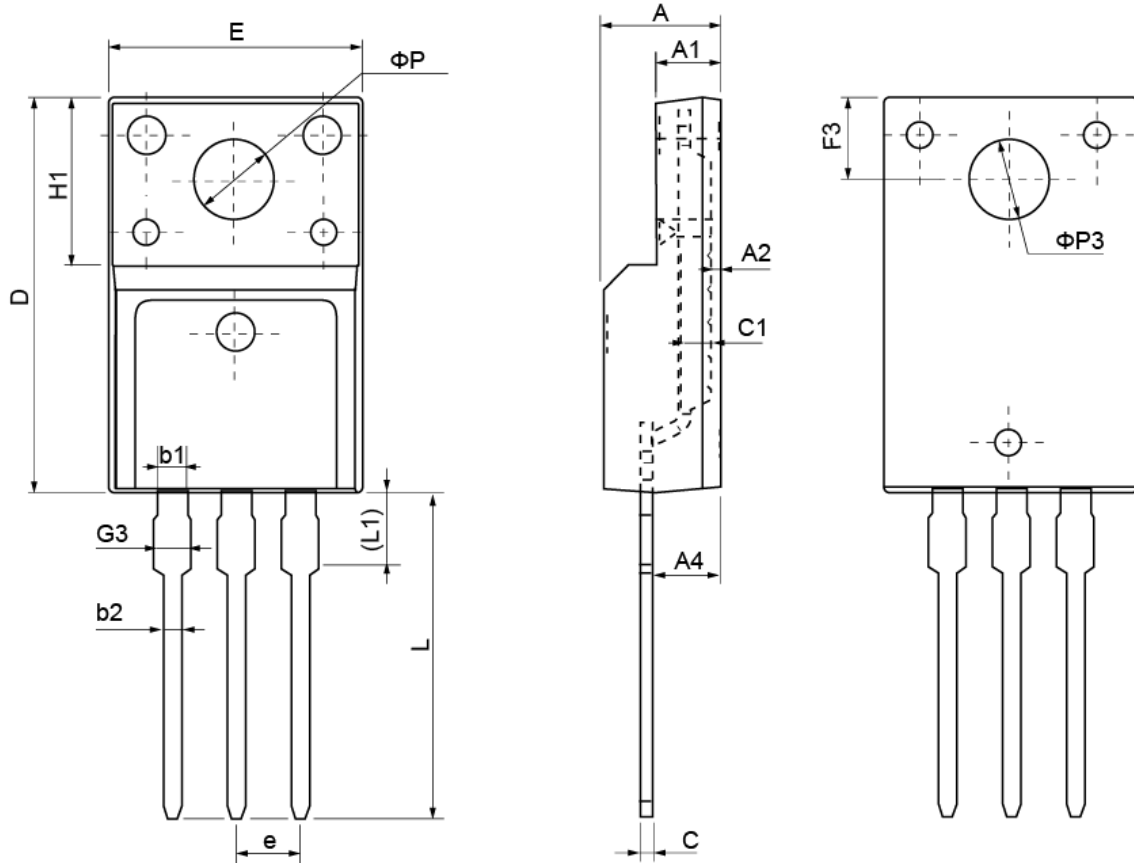


Figure 10. Transient Thermal Impedance



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	ϕP	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