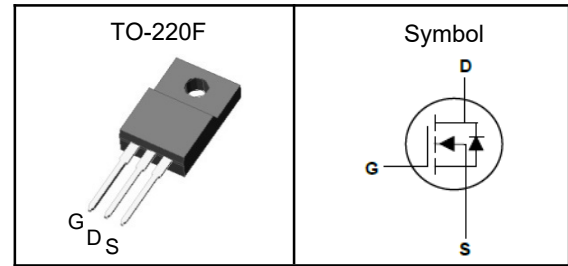


700V Super Junction Power MOSFET
Features

- Low drain-source on-resistance: $R_{DS(ON)}=0.54\Omega(\text{typ})$
- Easy to control gate switching
- Enhancement mode: $V_{th} = 2$ to 4 V
- 100% avalanche tested
- RoHS compliant

Applications

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

Pin Description


V_{DSS}	700	V
$R_{DS(ON)-Typ}$	540	m Ω
I_D	8	A

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

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	700	V
V_{GSS}	Gate-Source Voltage	± 30	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 ³	624	mJ
$I_{DM}^{①}$	Pulse Drain Current Tested	24	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	80	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	4.5	$^\circ\text{C}/\text{W}$

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

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

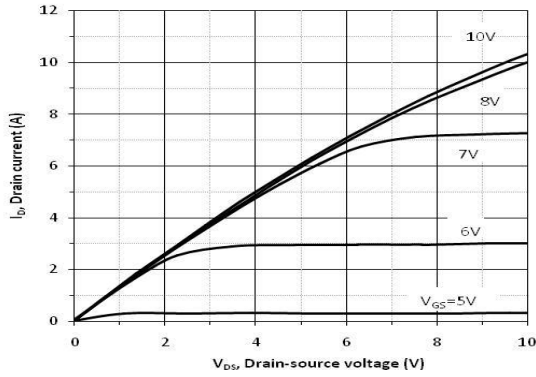
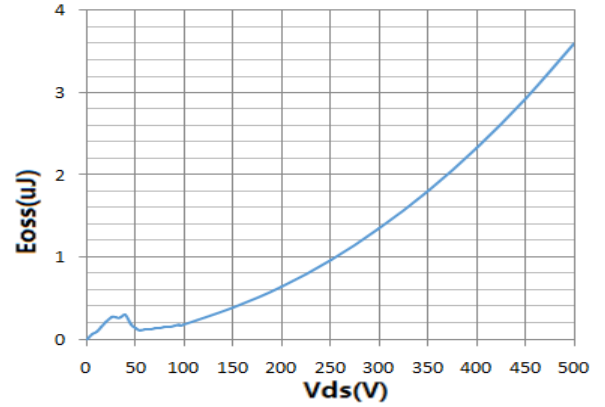
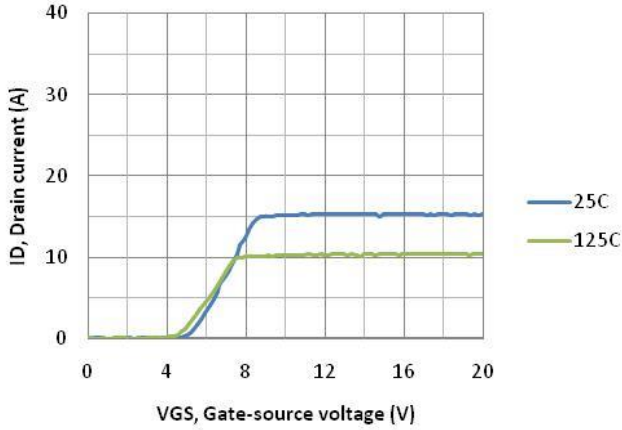
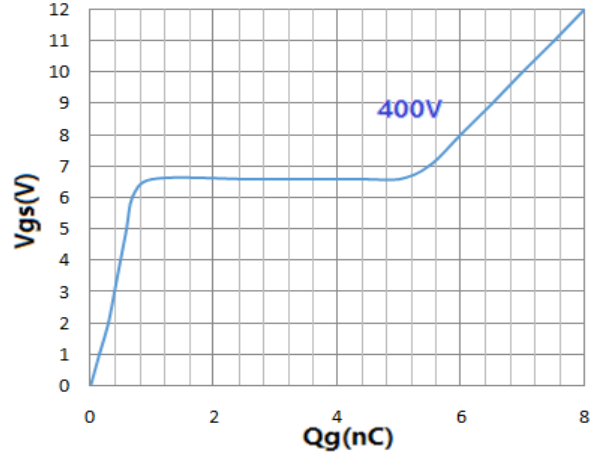
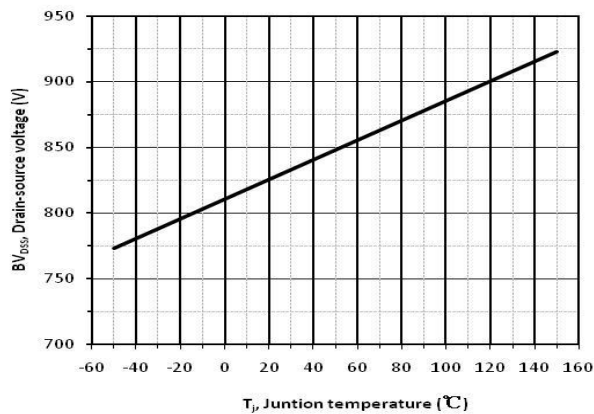
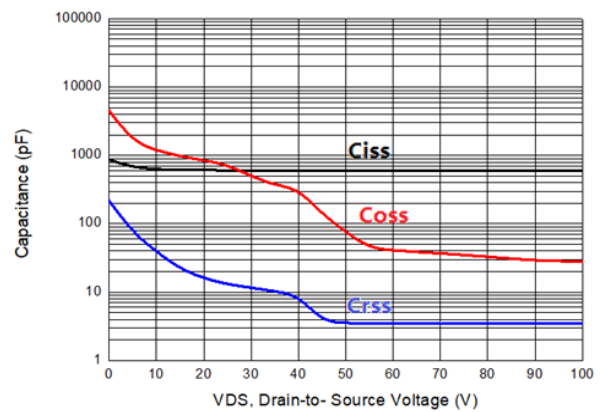
Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.

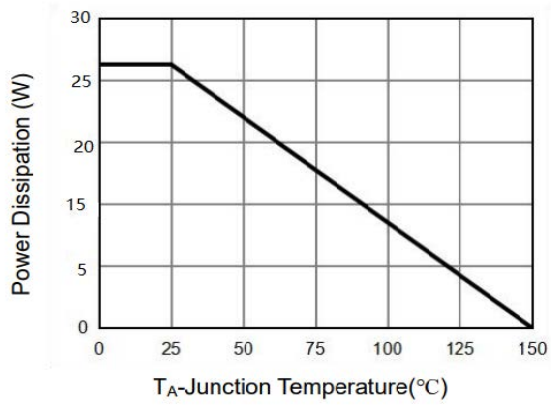
**700V Super Junction Power MOSFET****Electrical Characteristics** ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=10mA$	700	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=700V, V_{GS}=0V$	---	---	0.1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	---	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=3A$	---	540	600	m Ω
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, \text{Freq.}=1MHz$	---	599	---	pF
C_{oss}	Output Capacitance		---	76	---	
C_{rss}	Reverse Transfer Capacitance		---	3.55	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=400V, V_{GS}=10V, I_D=3A, R_G=6.8\Omega$	---	26.8	---	nS
T_r	Turn-on Rise Time		---	24.8	---	
$T_{d(off)}$	Turn-off Delay Time		---	127.6	---	
T_f	Turn-off Fall Time		---	21.2	---	
Q_g	Total Gate Charge	$V_{DS}=400V, V_{GS}=10V, I_D=3A$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	2.6	---	
Q_{gd}	Gate-Drain Charge		---	1.7	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	$I_f=1A, V_{GS}=0V$	---	0.76	---	V
t_{rr}	Reverse Recovery Time	$I_F=3A, V_{GS}=0V, di_f/dt=100A/\mu s$	---	174	---	nS
Q_{rr}	Reverse Recovery Charge		---	1.2	---	nC
I_{rrm}	Peak reverse recovery current		---	13.5	---	A

Note ④ : Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

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

700V Super Junction Power MOSFET
Typical Characteristics
Diagram 1: Typ. output characteristics

Diagram 2: Typ. Coss stored energy

Diagram 3: Typ. transfer characteristics

Diagram 4: Typ. gate charge

Diagram 5: Drain-source breakdown voltage

Diagram 6: Typ. capacitances


700V Super Junction Power MOSFET**Diagram 7: Maximum Power Dissipation**

700V Super Junction Power MOSFET
TO-220F Package Outline Data
