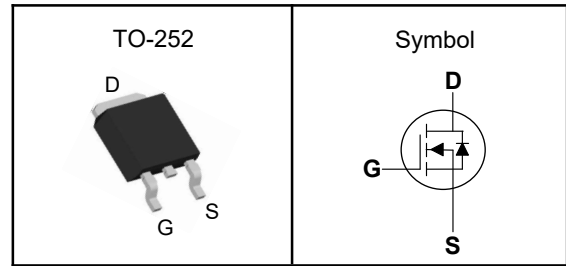


700V Super Junction Power MOSFET
Features

- Low drain-source on-resistance: $R_{DS(ON)}=0.26\Omega(\text{typ})$
- Easy to control gate switching
- Enhancement mode: $V_{th} = 2$ to $4V$
- 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
$R_{DS(ON)-Typ}$	260	m Ω
I_D	14.6	A

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, 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	375	mJ
$I_{DM}^{①}$	300 μs Pulse Drain Current Tested	44	A
I_D	Continuous Drain Current	14.6	A
P_D	Maximum Power Dissipation	120	W
I_{AS}	Avalanche Current	5	A
dv/dt	MOSFET dv/dt ruggedness, $V_{DS} = 0 \dots 400V$	50	V/ns
	Reverse diode dv/dt ³ $V_{DS}=0 \dots 400V, I_{SD} \leq I_D$	15	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance Junction-Ambient ¹	62	$^\circ\text{C}/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1	$^\circ\text{C}/W$

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.

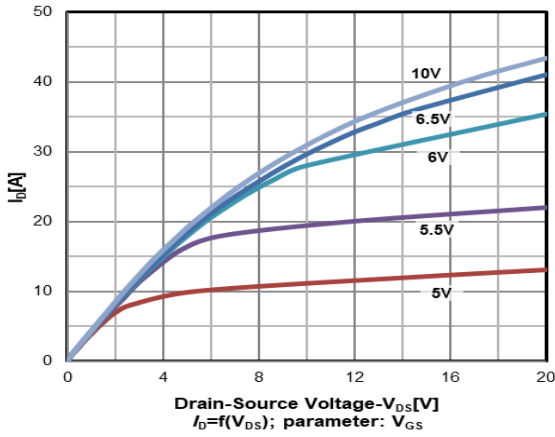
**700V Super Junction Power MOSFET****Electrical Characteristics** ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	700	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=700V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	---	4.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=7.5A$	---	260	300	m Ω
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=100V,$ Freq.=1.0MHz	---	1055	---	pF
C_{oss}	Output Capacitance		---	41	---	
C_{riss}	Reverse Transfer Capacitance		---	2.1	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=12V, V_{DD}=400V,$ $I_D=7.5A, R_G=15\Omega$	---	17	---	nS
T_r	Turn-on Rise Time		---	18	---	
$T_{d(off)}$	Turn-off Delay Time		---	89	---	
T_f	Turn-off Fall Time		---	20	---	
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DD}=400V, I_D=7.5A$	---	25	---	nC
Q_{gs}	Gate-Source Charge		---	5.2	---	
Q_{gd}	Gate-Drain Charge		---	9.3	---	
R_g	Gate resistance	f=1 MHz, open drain	---	13	---	Ω
Source-Drain Characteristics						
I_S	Continuous Source Current		---	---	14.6	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		---	---	44	A
V_{SD}	Diode Forward Voltage	$I_S=15A, V_{GS}=0V$	---	---	1.4	V
t_{rr}	Reverse recovery time	$I_S=7.5A, V_{GS}=0V$ $diF/dt=100A/\mu s$	---	295	---	ns
Q_{rr}	Reverse recovery charge		---	3.1	---	nC
I_{rrm}	Peak Reverse Recovery Current		---	20.5	---	A

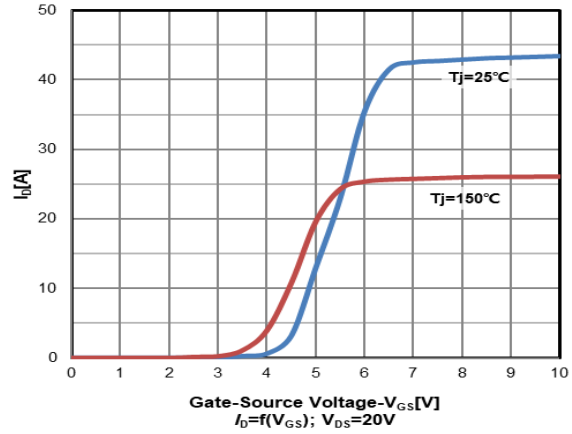
Note ④: Pulse test (pulse width \leq 300 μs , duty cycle \leq 2%).

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

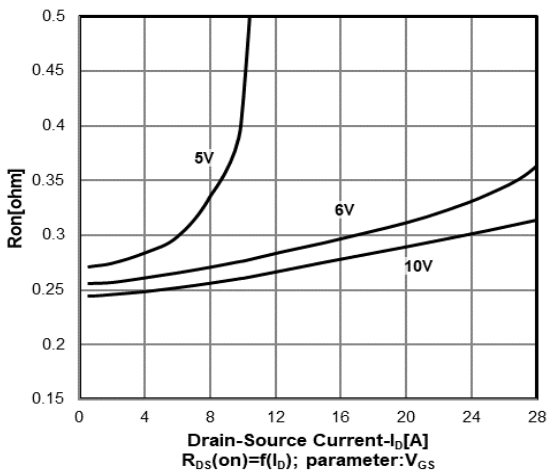
700V Super Junction Power MOSFET
Typical Characteristics

 Typ. output characteristics $T_J=25\text{ }^\circ\text{C}$


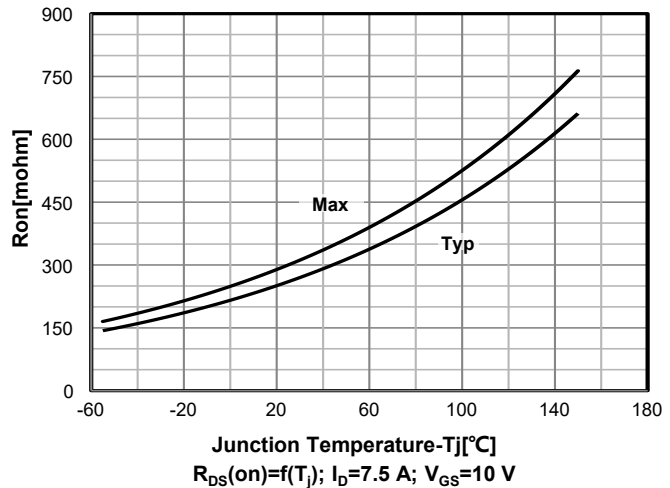
Typ. transfer characteristics



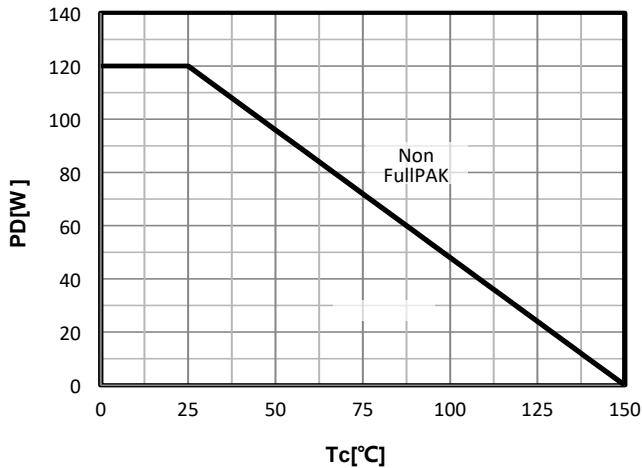
Typ. drain-source on-state resistance



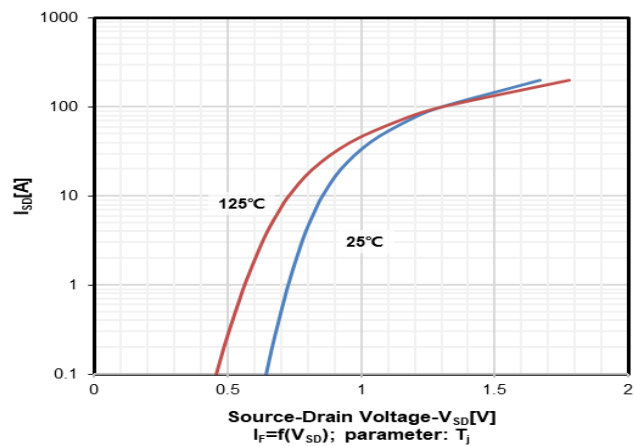
On resistance vs temperature



Power dissipation

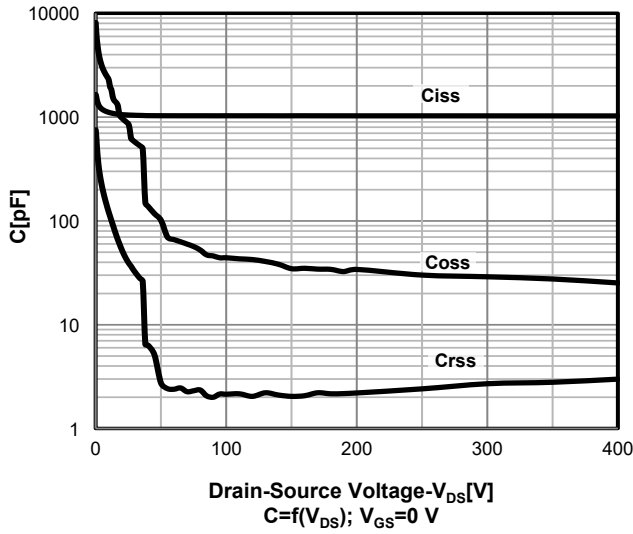


Forward characteristics of reverse diode

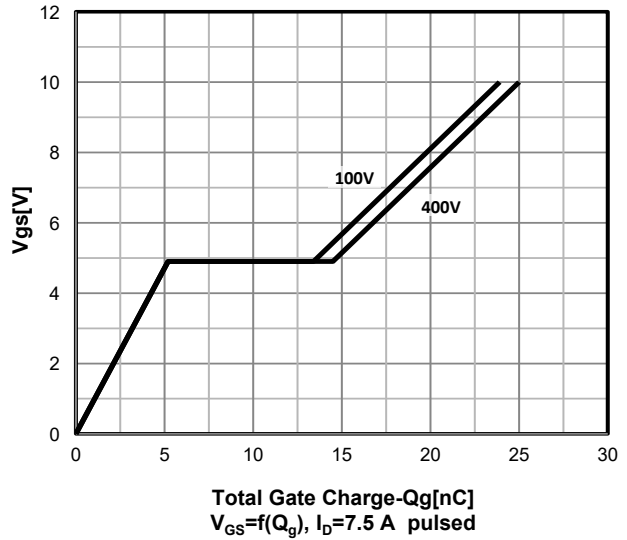
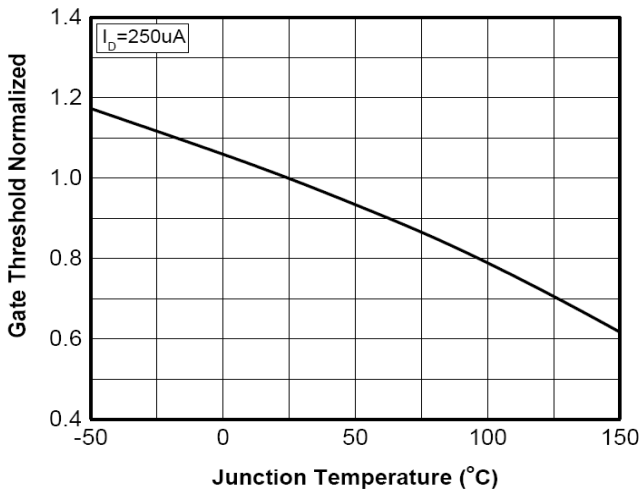
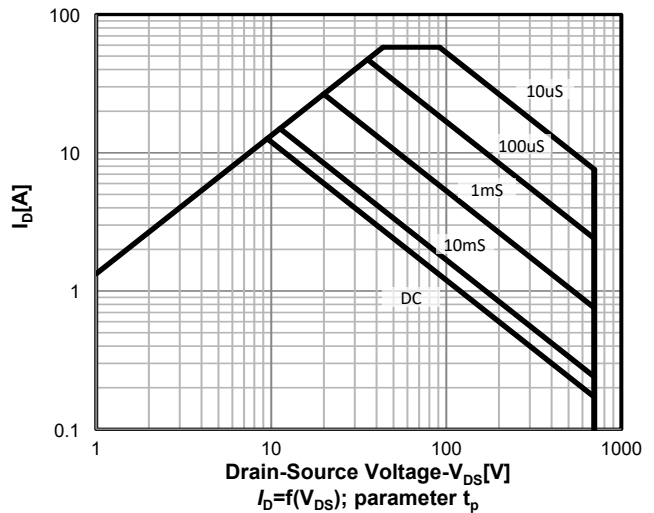


700V Super Junction Power MOSFET

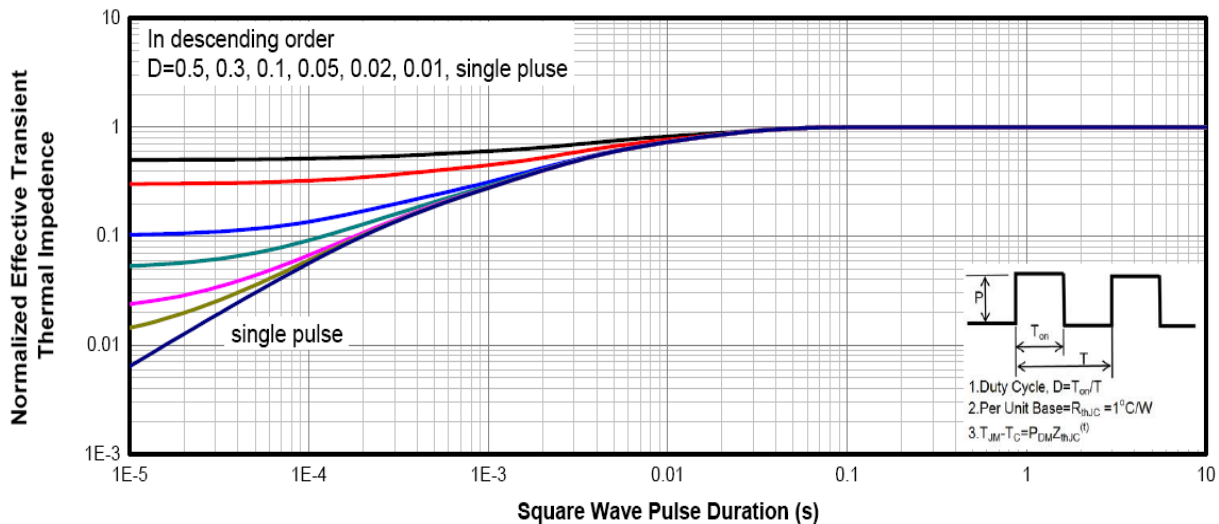
Typ. capacitances

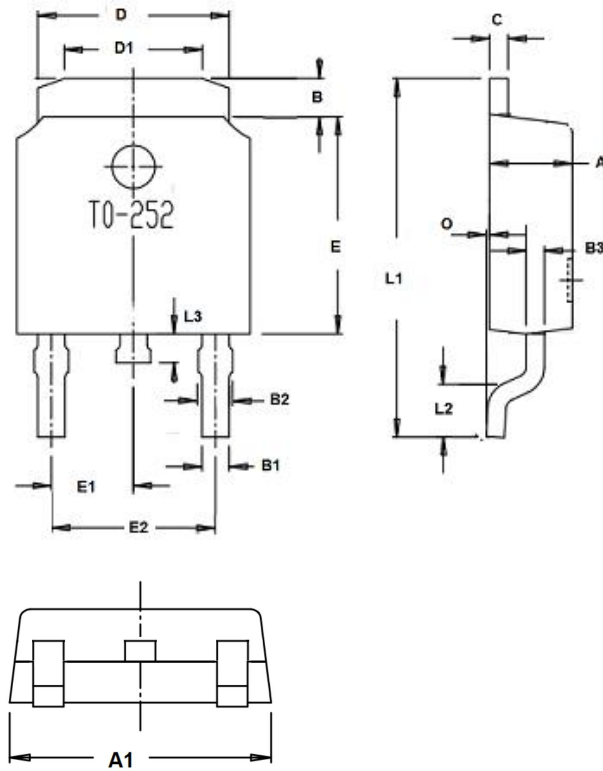


Typ. gate charge characteristics


 Normalized $V_{GS(th)}$ characteristics

 Safe operating area $T_C=25\text{ }^{\circ}\text{C}$


Max. transient thermal impedance



700V Super Junction Power MOSFET
TO-252 Package Outline Dimensions


Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.96	1.42
B1	0.74	0.86
B2	0.74	0.94
C	Typ0.5	
D	5.33	5.53
D1	3.65	4.05
E	6.0	6.2
E1	Typ2.29	
E2	Typ4.58	
O	0	0.15
L1	9.9	10.5
L2	Typ1.65	
L3	0.6	1.0
All Dimensions in millimeter		