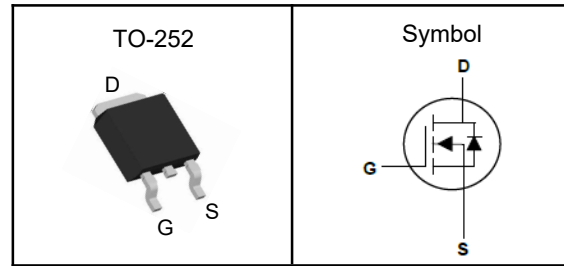


700V Super Junction Power MOSFET
Features

- Low drain-source on-resistance: $R_{DS(ON)}=0.33\Omega(\text{typ})$
- Easy to control gate switching
- Enhancement mode: $V_{th} = 2.0$ to $4.0V$
- 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
$R_{DS(ON)-Typ}$	330	m Ω
I_D	11	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	240	mJ
$I_{DM}^{①}$	Pulse Drain Current Tested	37	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	62.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.2	$^\circ\text{C/W}$

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

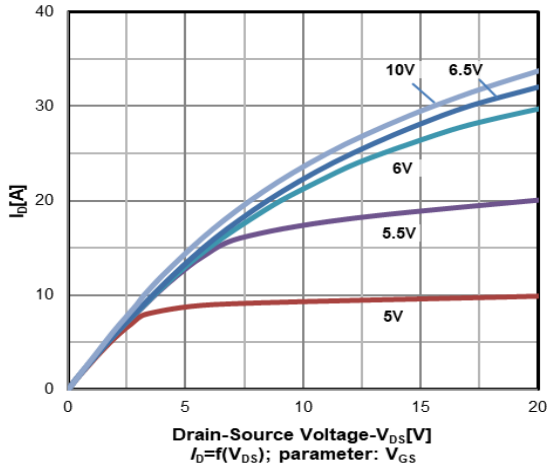
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

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	$V_{GS}=10V, I_D=6A$	---	330	380	m Ω
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=100V,$ Freq.=1.0MHz	---	760	---	pF
C_{oss}	Output Capacitance		---	32	---	
C_{rss}	Reverse Transfer Capacitance		---	2.3	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DD}=400V,$ $I_D=6A, R_G=10\Omega$	---	15	---	nS
T_r	Turn-on Rise Time		---	23	---	
$T_{d(off)}$	Turn-off Delay Time		---	53	---	
T_f	Turn-off Fall Time		---	21	---	
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DD}=400V, I_D=6A$	---	18	---	nC
Q_{gs}	Gate-Source Charge		---	3.7	---	
Q_{gd}	Gate-Drain Charge		---	6.9	---	
R_g	Gate resistance	f=1 MHz, open drain	---	12	---	Ω
Source-Drain Characteristics						
I_S	Continuous Source Current		---	---	11	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		---	---	37	A
V_{SD}	Diode Forward Voltage	$I_S=12A, V_{GS}=0V$	---	---	1.4	V
t_{rr}	Reverse recovery time	$I_S=6A, V_{GS}=0V,$ $diF/dt=100A/\mu s$	---	250	---	ns
Q_{rr}	Reverse recovery charge		---	2.1	---	nC
I_{rrm}	Peak Reverse Recovery Current		---	17	---	A

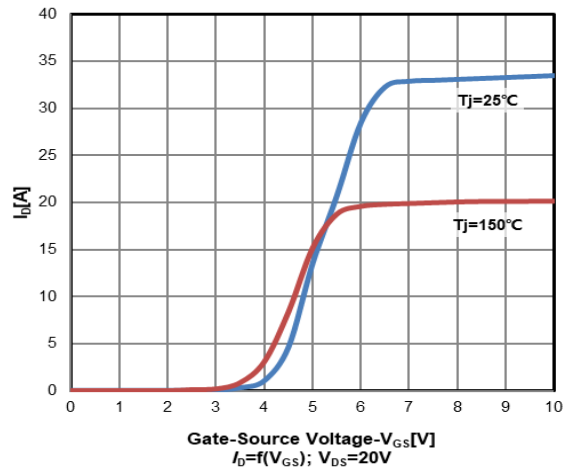
Note ④: Pulse test (pulse width \leq 300us, duty cycle \leq 2%).

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

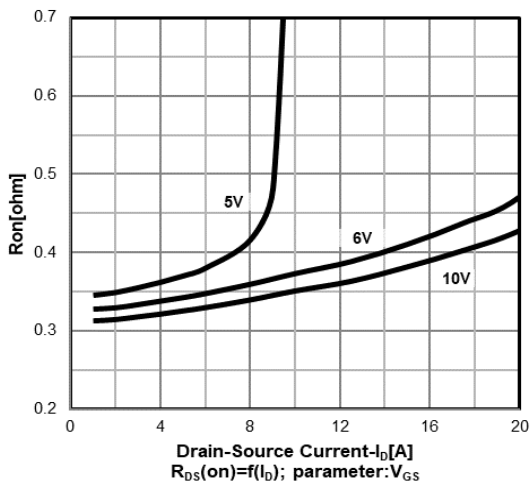
700V Super Junction Power MOSFET
Typical Characteristics

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


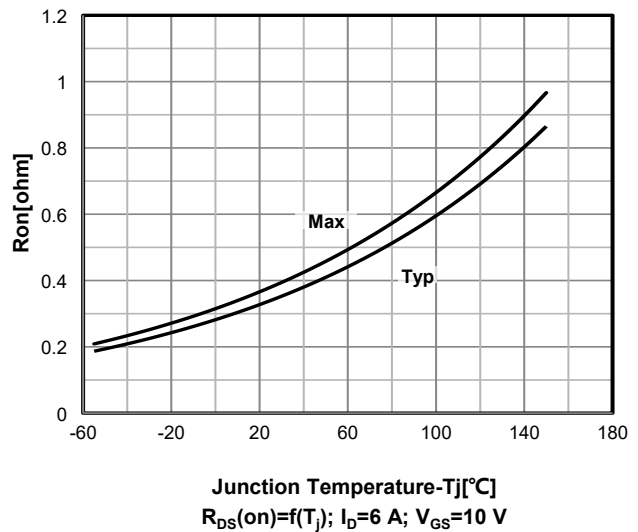
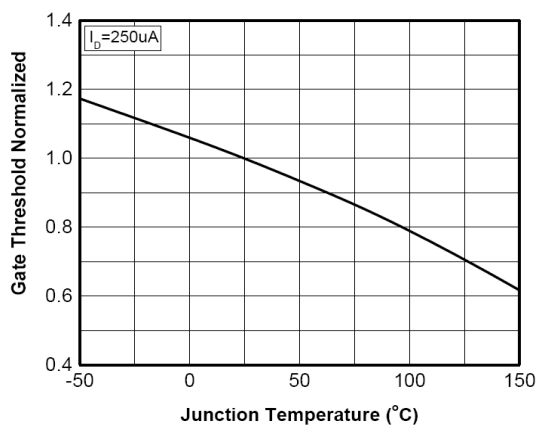
Typ. transfer characteristics



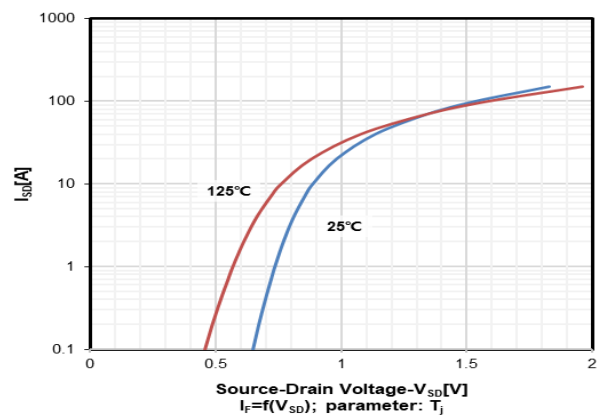
Typ. drain-source on-state resistance



On resistance vs temperature

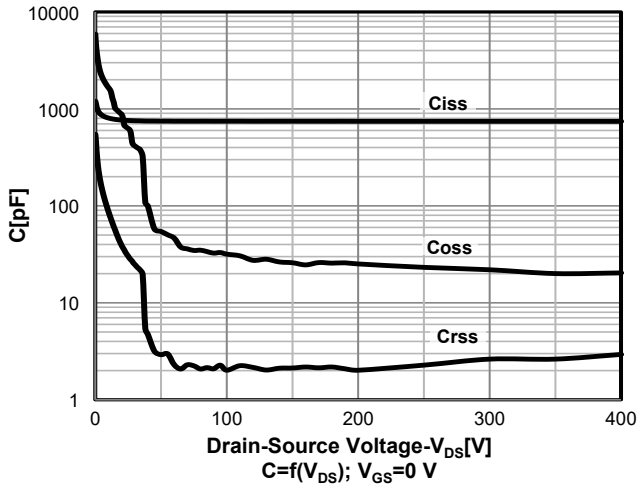

 Normalized $V_{GS(th)}$ characteristics


Forward characteristics of reverse diode

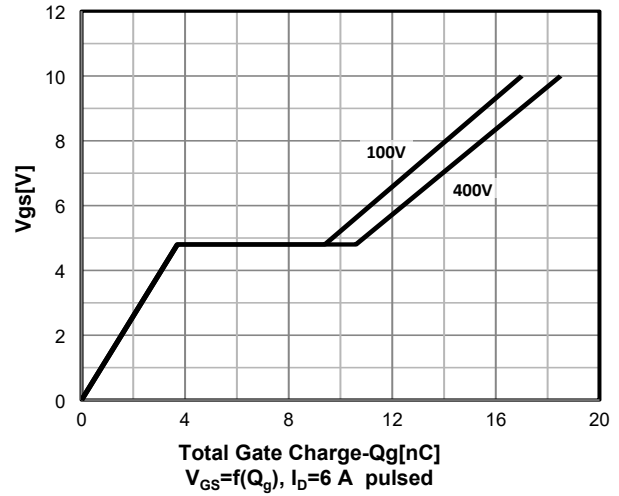
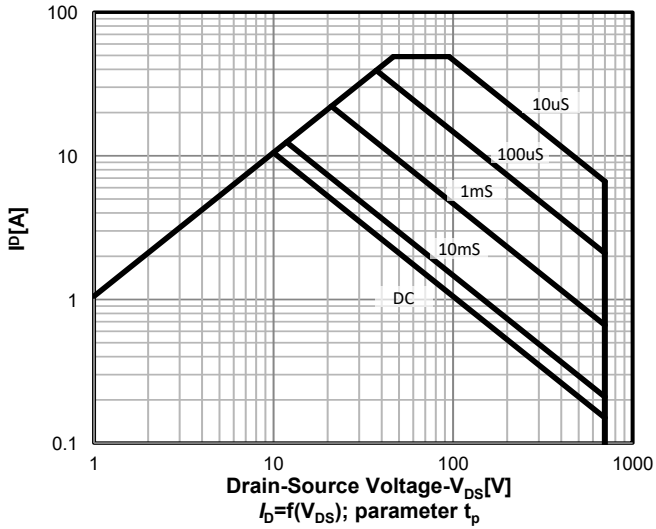


700V Super Junction Power MOSFET

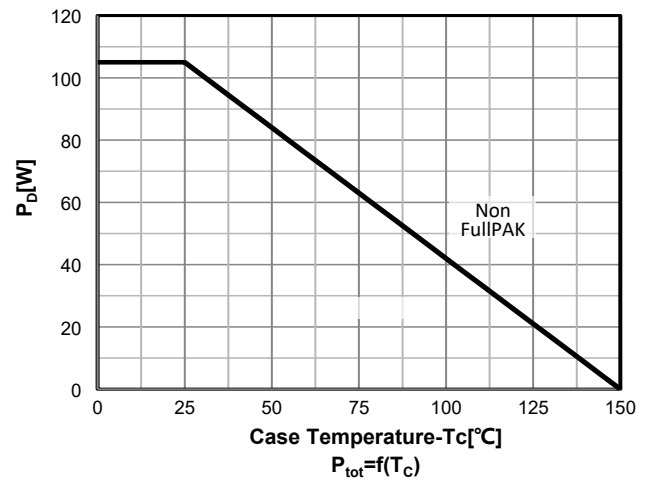
Typ. capacitances



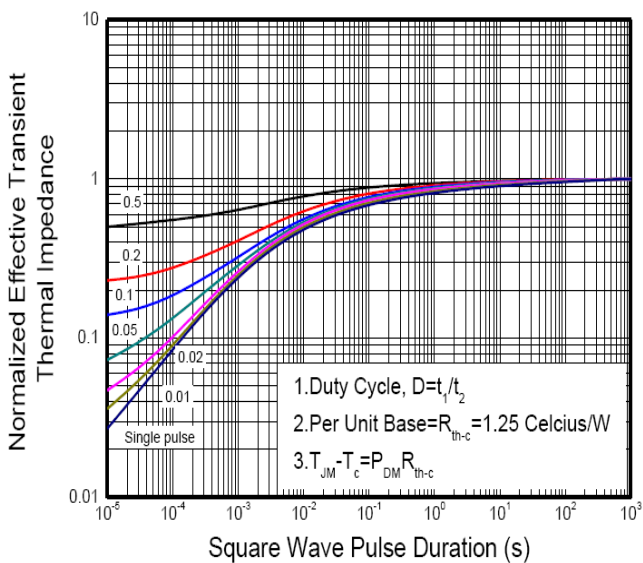
Typ. gate charge characteristics

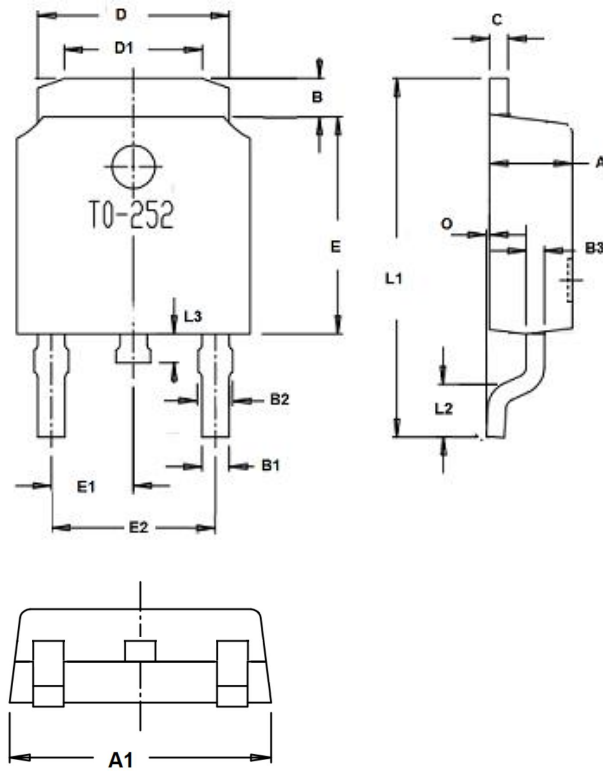

 Safe operating area $T_C = 25^\circ \text{C}$


Power dissipation



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		