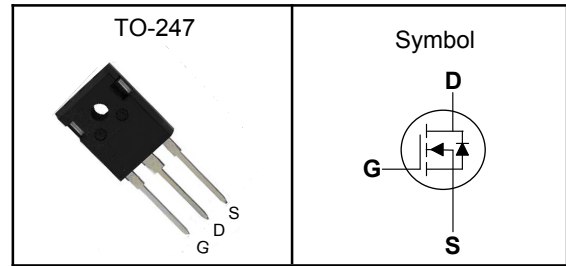


600V Super Junction Power MOSFET
Features

- Low drain-source on-resistance: $R_{DS(ON)}=0.06\Omega(\text{typ})$
- Easy to control gate switching
- Enhancement mode: $V_{th} = 2.5$ to $4.5V$
- 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}	600	V
$R_{DS(ON)-Typ}$	60	m Ω
I_D	43	A

Absolute Maximum Ratings ($T_C=25^\circ C$, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit	
V_{DSS}	Drain-Source Voltage	600	V	
V_{GSS}	Gate-Source Voltage	± 30	V	
T_J	Maximum Junction Temperature	-55 to 150	$^\circ C$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$	
E_{AS}	Single Pulse Avalanche Energy	960	mJ	
$I_{DM}^{①}$	300 μs Pulse Drain Current Tested	129	A	
I_D	Continuous Drain Current	$T_C=25^\circ C$	43	A
	Continuous Drain Current	$T_C=100^\circ C$	27	A
P_D	Maximum Power Dissipation	$T_C=25^\circ C$	236	W
I_{AS}	Avalanche Current	8	A	
dv/dt	MOSFET dv/dt ruggedness, $V_{DS} = 0 \dots 480V$	50	V/ns	
	Reverse diode dv/dt3 $V_{DS}=0 \dots 400V, I_{SD} \leq I_D$	15		

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance Junction-Ambient ₁	62.5	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ₁	0.53	$^\circ C/W$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature $150^\circ C$.

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



600V Super Junction Power MOSFET

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

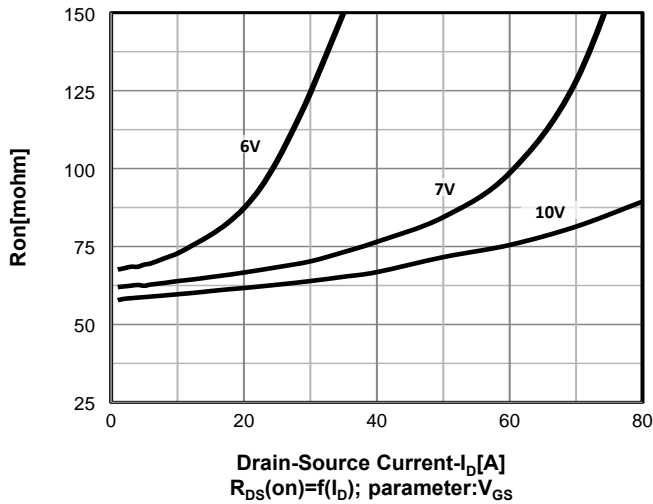
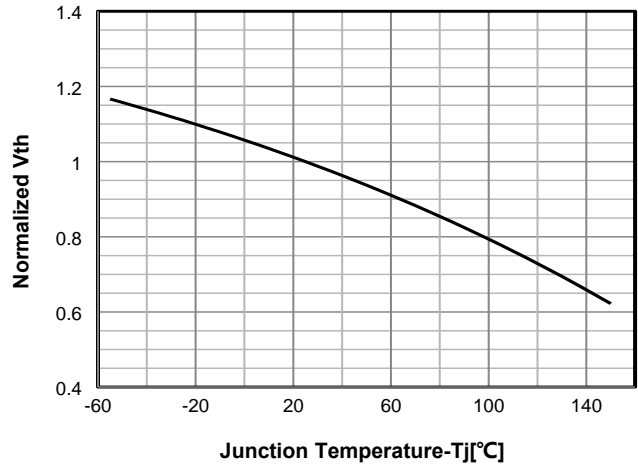
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=1mA$	600	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=600V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=2.5mA$	2.5	---	4.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=20A$	---	60	70	m Ω
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=100V,$ Freq.=1MHz	---	3200	---	pF
C_{oss}	Output Capacitance		---	140	---	
C_{rss}	Reverse Transfer Capacitance		---	3.7	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DD}=400V$ $I_D=20A, R_G=3\Omega$	---	23	---	nS
T_r	Turn-on Rise Time		---	15	---	
$T_{d(off)}$	Turn-off Delay Time		---	88	---	
T_f	Turn-off Fall Time		---	10	---	
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DD}=400V, I_D=20A$	---	76	---	nC
Q_{gs}	Gate-Source Charge		---	22	---	
Q_{gd}	Gate-Drain Charge		---	25	---	
R_g	Gate resistance	f=1 MHz, open drain	---	1	---	Ω
Source-Drain Characteristics						
I_S	Continuous Source Current		---	---	43	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		---	---	129	A
V_{SD}	Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	---	---	1.4	V
t_{rr}	Reverse recovery time	$I_S=20A, V_{GS}=0V$ $diF/dt=100A/\mu s$	---	420	---	ns
Q_{rr}	Reverse recovery charge		---	7.4	---	nC
I_{rrm}	Peak Reverse Recovery Current		---	35	---	A

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

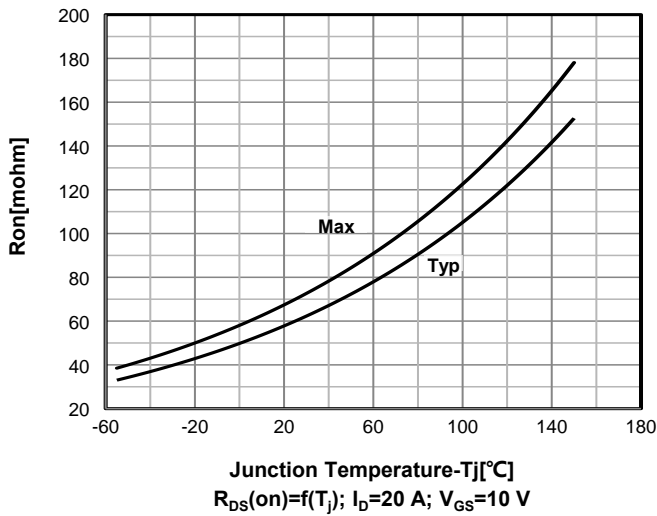
Note ⑤: Guaranteed by design, not subject to production testing.

600V Super Junction Power MOSFET
Typical Characteristics

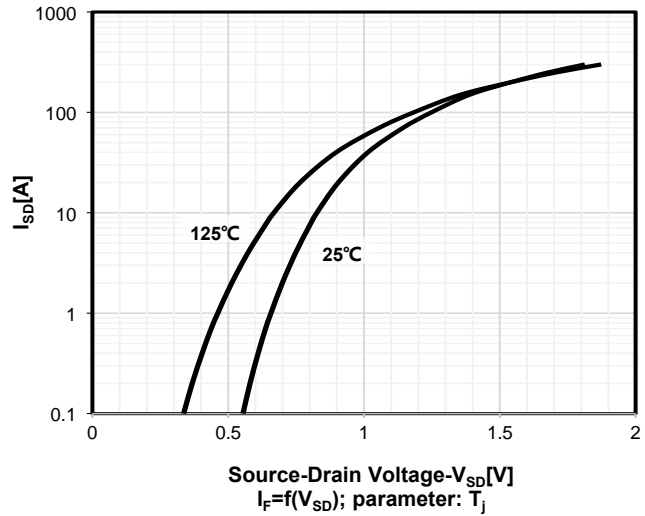
Typ. drain-source on-state resistance


 Normalized $V_{GS(th)}$ characteristics


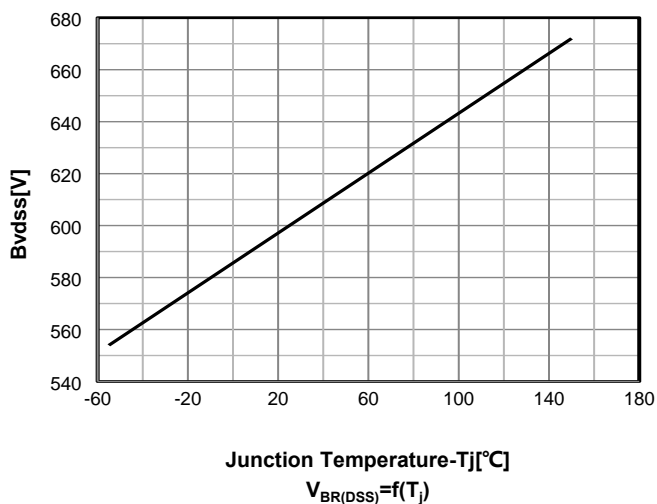
On-resistance vs temperature



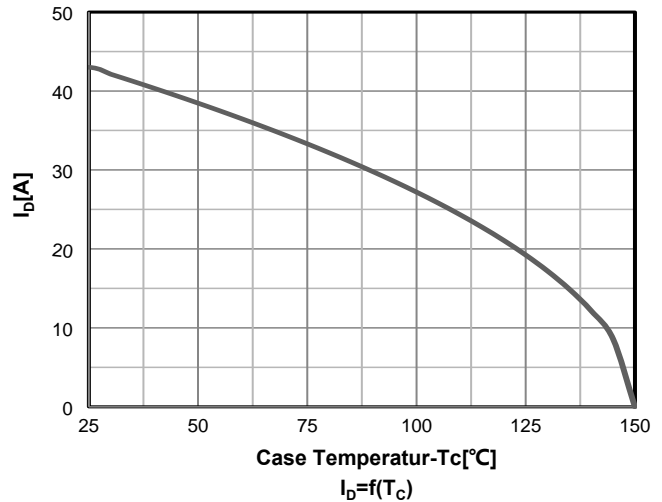
Forward characteristics of reverse diode



Drain-source breakdown voltage

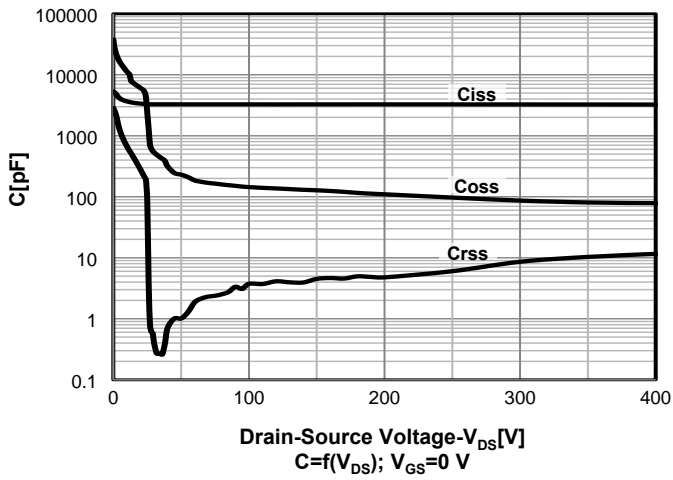


Drain current vs temperature

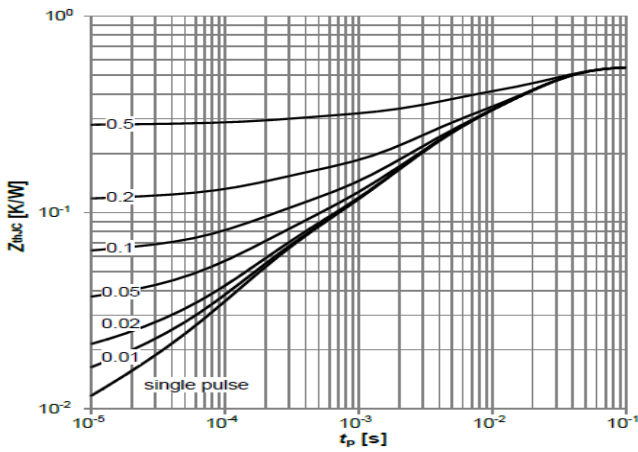


600V Super Junction Power MOSFET

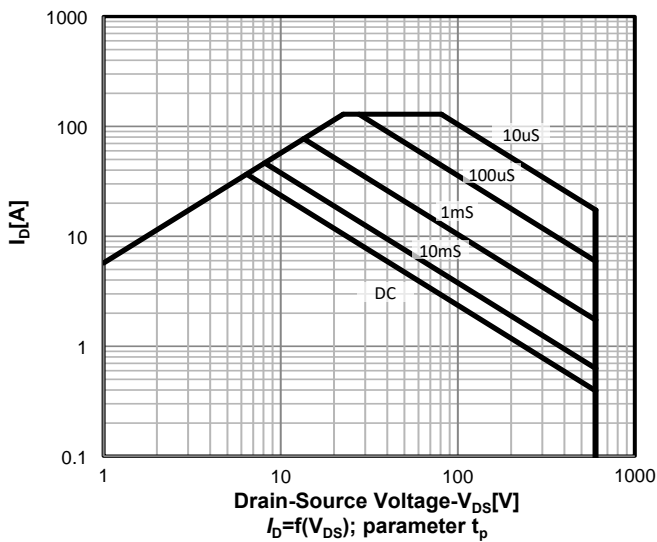
Typ. capacitances



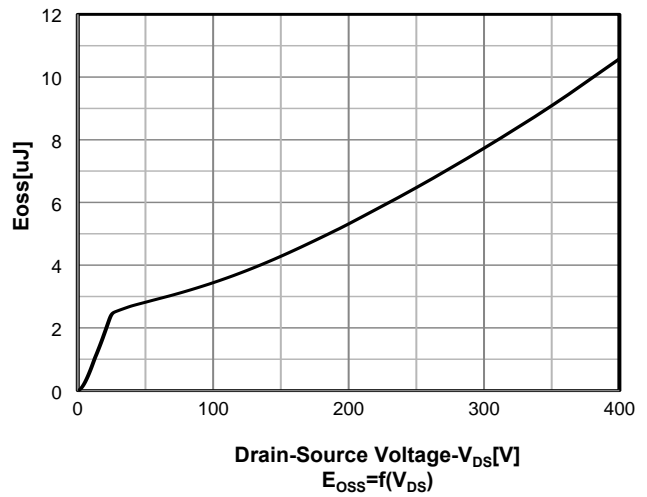
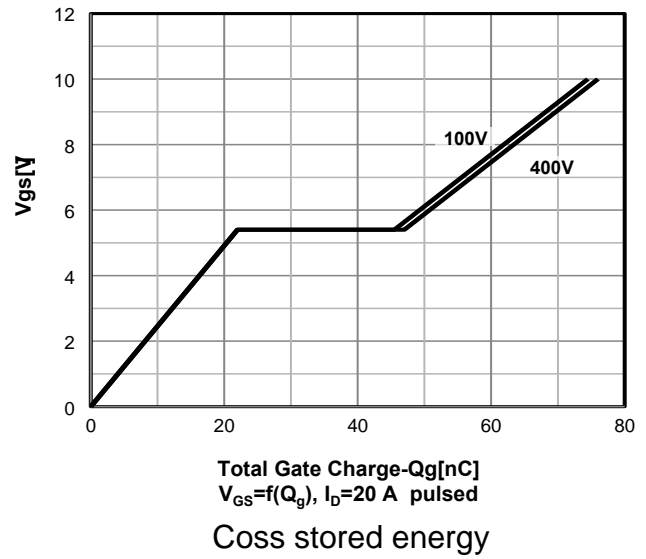
Max. transient thermal impedance parameter: $D = t_p / T$



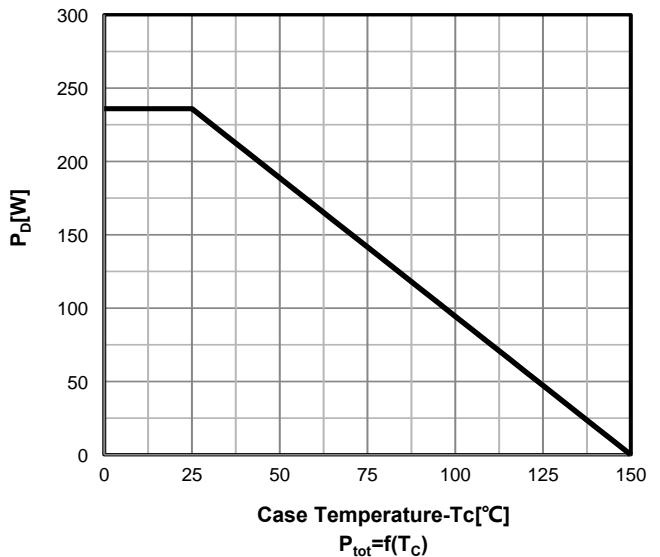
Safe operating area $T_C = 25^\circ\text{C}$
TO-247

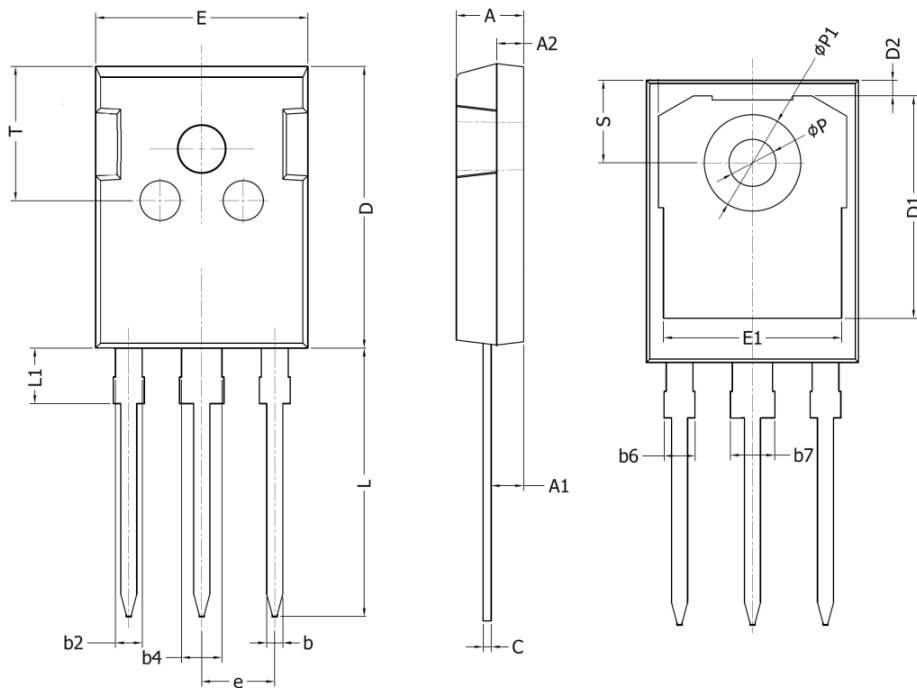


Typ. gate charge characteristics



Power dissipation



600V Super Junction Power MOSFET
TO-247 Package Outline Dimensions


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.90	5.20
A1	2.31	2.51
A2	1.9	2.1
b	1.16	1.26
b2	1.96	2.06
b4	2.96	3.06
b6	-	2.25
b7	-	3.25
C	0.59	0.66
D	20.90	21.20
D1	16.25	16.85
D2	1.05	1.35
E	15.75	16.10
E1	13.00	13.60
e	5.436 BSC	
L	19.80	20.20
L1	-	4.30
P	3.40	3.60
P1	7.00	7.40
S	6.05	6.25
T	9.80	10.20



印字说明

印字说明

FS60R070CG

AABBCC

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。