650V N-Channnel Super Junction Power MOSFET

DESCRIPTION

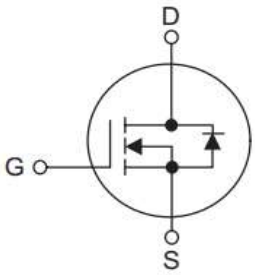
The **65R600F** use advanced super junction technology and design to provide excellent RDS(ON) with low gate charge. This super junction MOSFET is used Power faction correction and Switched mode power supplies. It also be used Uninterruptible power supply.

FEATURES

* low RDS(on)
*SuperJunction Technology
*Low Switching Loss

SYMBOL

1. Gate
2. Drain
3. Source



Package Description

Product Model	Package Type	Mark Name	Indentification Code	Package
CMS65R600F	TO-220F	CMS65R600	F	Tube

CMS65R600F

(2) Package type

(1) Chip name

(1) CMS65R600F: 650V 7A (2) D:TO-220F

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	650	V
Gate-Source Voltage			V_{GSS}	±30	V
Avalanche Current (Note 1)			I_{AR}	1.3	A
Drain Current	Continuous(Tc=25°C)		I_D	7.0	A
Drain Current	Pulsed (Note1)		I_{DM}	24	A
Avalanche Energy	Single Pulsed (Note1)		E_{AS}	129	mJ
Power Dissipation	Tc=25°C	TO-220F	PD	28	W
Junction Temperature			T_J	+150	°C
Storage Temperature			T_{STG}	-55~+150	°C

Notes:
1. Pulse test: 300 μs pulse width, 2 % duty cycle

THERMAL CHARACTERISTICS

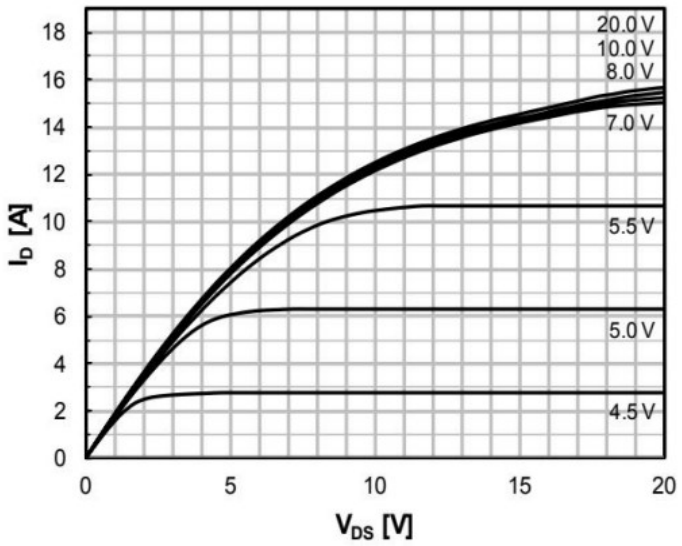
Symbol	Parameter	PACKAGE	RATINGS	Units
$R_{\theta JC}$	Junction-to-Case	TO-220F	4.8	°C/W
$R_{\theta JA}$	Junction-to-Ambient	TO-220F	62	°C/W

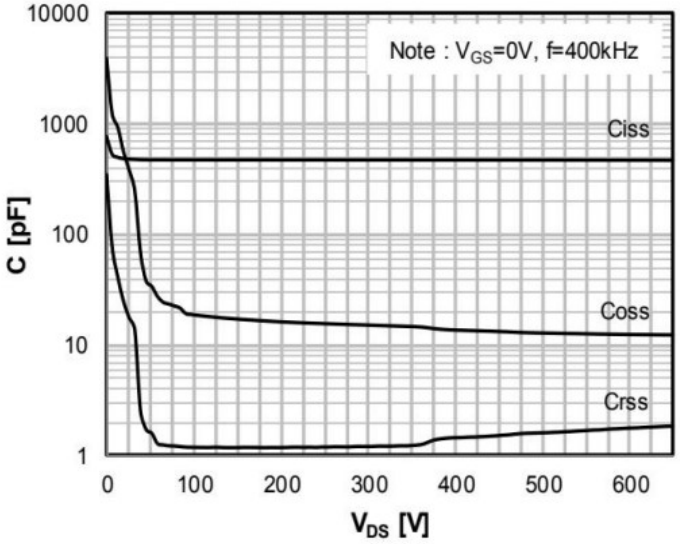
ELECTRICAL CHARACTERISTICS (T_C =25°C, unless otherwise specified)

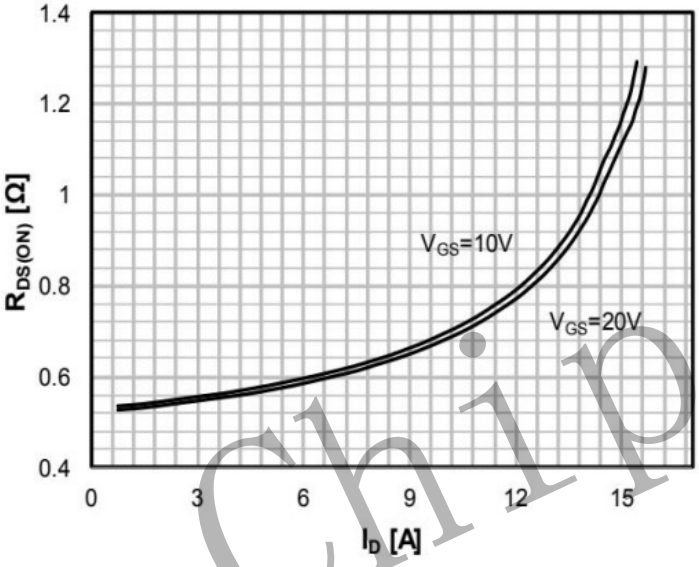
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} = 0 V, I_D = 250μA	650			V
Zero Gate Voltage Drain Current		I_{DSS}	VDS = 650 V, VGS = 0 V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS} = 30 V, V_{DS} = 0 V			100	nA
	Reverse		V_{GS} = -30 V, V_{DS} = 0 V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0		4.0	V
Static Drain-Source On- Resistance		$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 3.5A		530	600	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{DS} =50 V, V_{GS} =0V , f = 1MHz		471		pF
Output Capacitance		C_{OSS}			35		pF
Reverse Transfer Capacitance		C_{RSS}			1.7		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note2)		Q_G	V_{DS}= 520V, I_D= 7A, V_{GS}= 10V		13		nC
Gate-Source Charge (Note2)		Q_{GS}			2.1		nC
Gate-Drain Charge (Note2)		Q_{GD}			6.9		nC
Turn-On Delay Time (Note2)		$t_{D(ON)}$	V_{DD}=325V, I_D = 7A, R_G =25Ω, V_{GS}= 10V		17		ns
Turn-On Rise Time (Note2)		t_R			26		ns
Turn-Off Delay Time (Note2)		$t_{D(OFF)}$			53		ns
Turn-Off Fall Time (Note2)		t_F			38		ns
Drain-Source Diode Characteristics and Maximum Ratings							
Maximum Continuous Drain-Source Diode Forward Current		I_{SD}				7	A
Maximum Pulsed Drain-Source Diode Forward Current (Note2)		I_{SM}				24	A
Drain-Source Diode Forward Voltage		V_{SD}	T_J=25℃ ,V_{GS} = 0 V, I_{SD}=3.5A			1.4	V

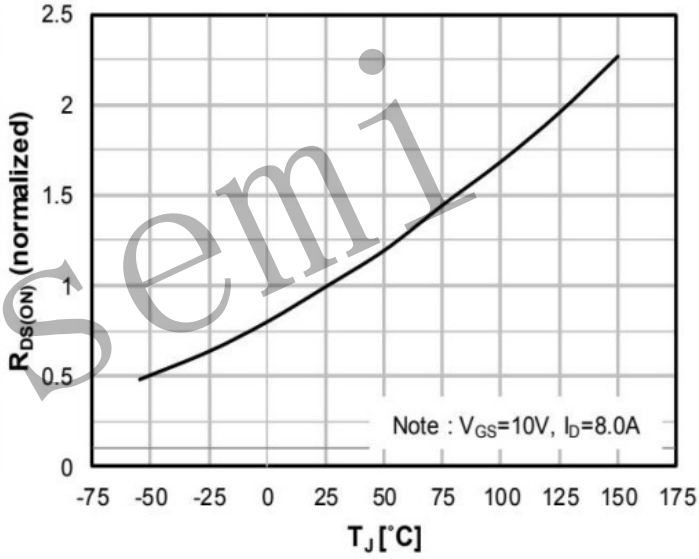
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

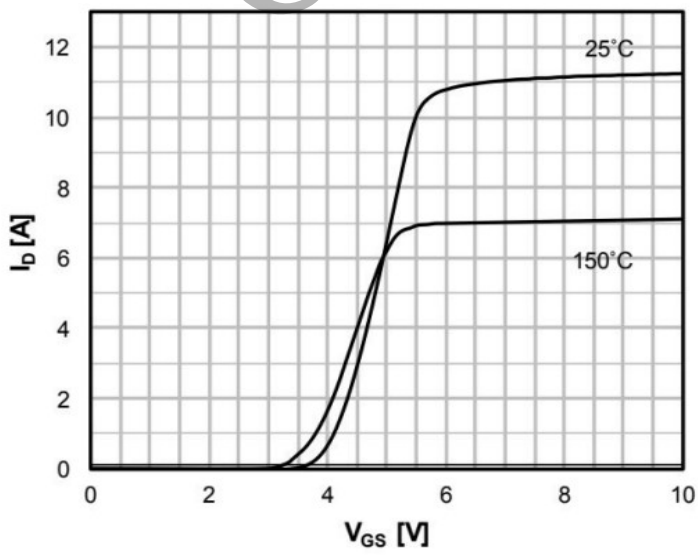
YPICAL CHARACTERISTICS

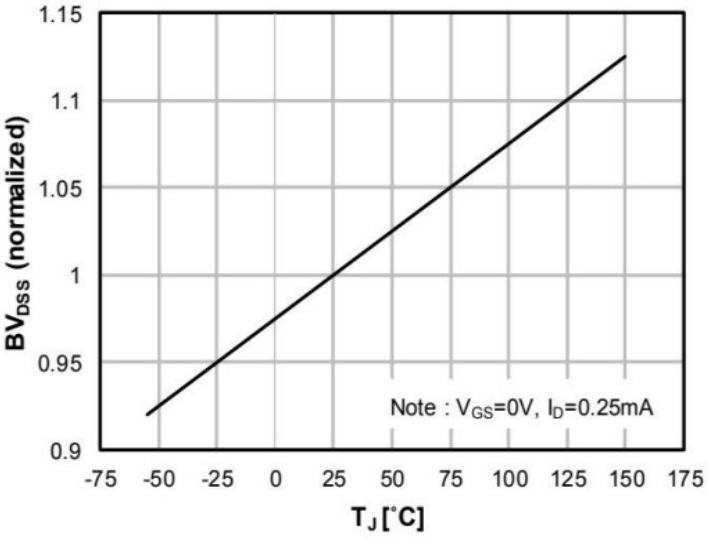




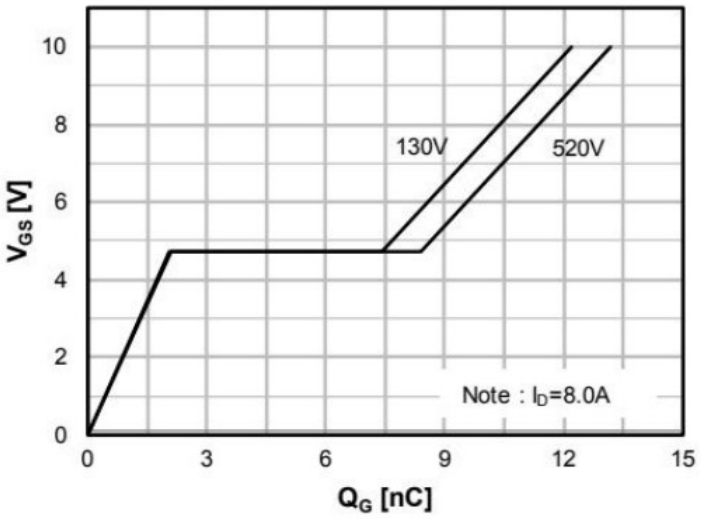


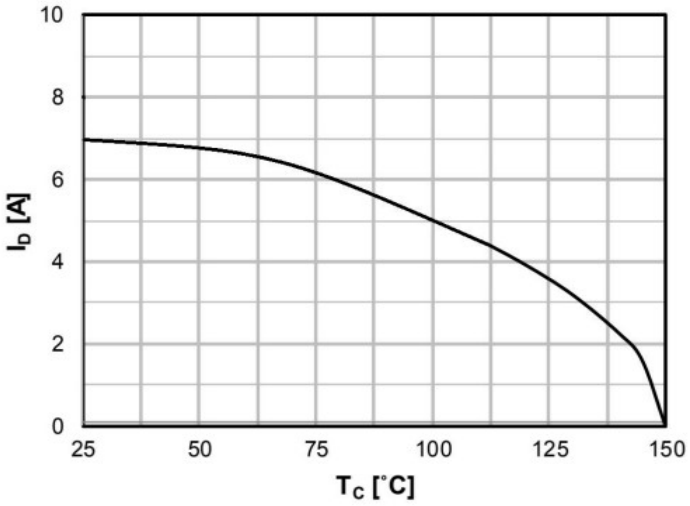


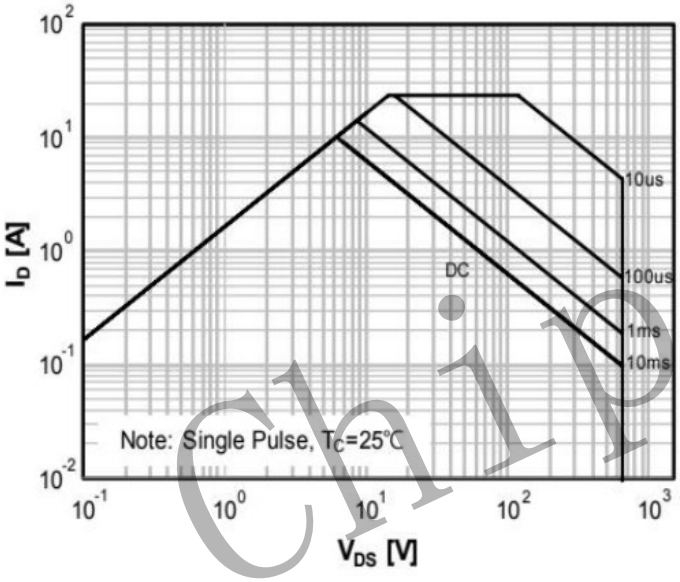


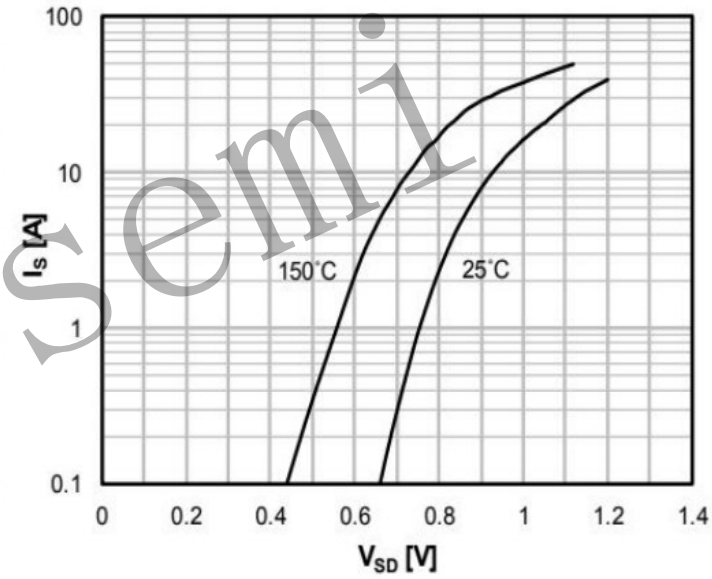


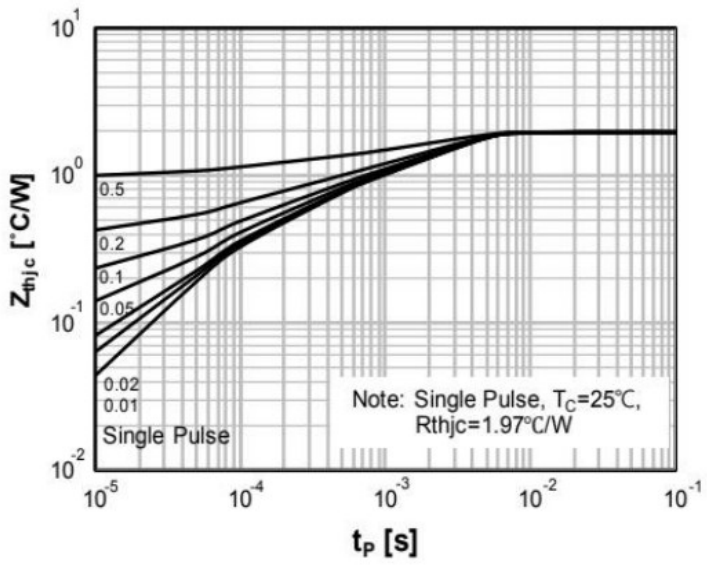
TYPICAL CHARACTERISTICS (Cont.)











Attentions

- Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
- When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
- MOSFET is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
- Chipsemi reserves the right to make changes in this specification sheet and is subject to change without prior notice.

Appendix

Revision history:

Date	REV.	Description	Page
2023.3	1.0	Original	6