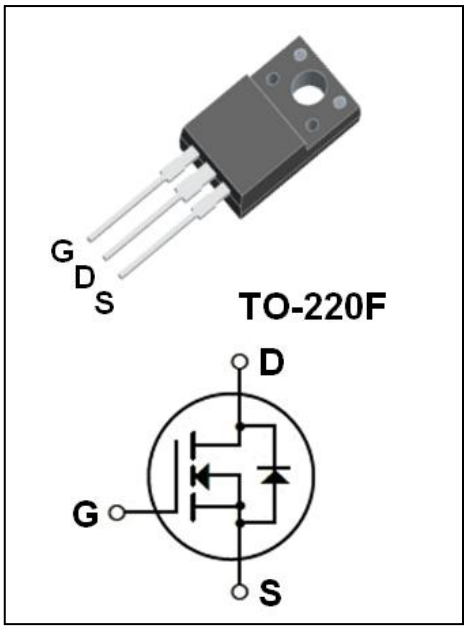
HIF70R135-P

N-Channel SiC Power MOSFET

● Features:

- ■ High Blocking Voltage with Low On-Resistance
- ■ High Speed Switching with Low Capacitance
- ■ Easy to Parallel and Simple to Drive

V_{DSS}	700	V
$R_{DS(on)(Typ)}$	135	mΩ
I_D@25°C	24	A



● Benefits:

- ■ Higher System Efficiency
- ■ Reduced Cooling Requirements
- ■ Increased Power Density
- ■ Increased System Switching Frequency

● Applications:

- ■ Renewable Energy
- ■ EV Battery Chargers
- ■ High Voltage DC/DC Converters
- ■ Switch Mode Power Supplies

Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Value	Unit
V_{DSmax}	Drain-Source Voltage	V_{GS}=0V, I_D=250μA	700	V
V_{GSmax}	Gate-Source Voltage	Absolute maximum values	-8/+20	V
V_{GSop}	Gate-Source Voltage	Recommended operational values	0/+18	V
I_D	Continuous Drain Current	V_{GS}=18V, T_C =25°C	24	A
		V_{GS}=18V, T_C =100°C	17	
$I_{D(pulse)}$	Pulsed Drain Current	Pulse width tp limited by T_{Jmax}	60	A
P_D	Power Dissipation	T_C =25°C, T_J =175°C	37	W
T_J, T_{STG}	Operating Junction and Storage Temperature	--	-40 to +175	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	4.05	--	°C/W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	--	80	

Electrical Characteristics(T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	700	--	--	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=2.0mA	2.3	3.5	4.8	V
		V_{DS}=V_{GS},I_D=2.0mA, T_J=175°C	--	2.5	--	
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=700V, V_{GS}=0V	--	0.3	20	μA
I_{GSS+}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=20V	--	20	250	nA
I_{GSS-}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=-8V	--	-20	-250	nA
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=18V, I_D=8.0A	--	135	170	mΩ
		V_{GS}=15V, I_D=8.0A	--	190	--	mΩ
Ciss	Input Capacitance	V_{GS}=0V,V_{DS}=600V, f=1MHz	--	490	--	pF
Coss	Output Capacitance		--	40	--	
Crss	Reverse Transfer Capacitance		--	3.1	--	
td(on)	Turn-On Delay Time	V_{DS}=400V, V_{GS}=18V, I_D=8.0A ,$R_{G(ext)}$=5Ω	--	12.8	--	ns
tr	Rise Time		--	38.5	--	
td(off)	Turn-Off Delay Time		--	27	--	
tf	Fall Time		--	40.5	--	
Q_G	Total Gate Charge	V_{DS}=400V V_{GS}=18V I_D=8.0A	--	29.8	--	nC
Q_{GS}	Gate to Source Charge		--	10.5	--	
Q_{GD}	Gate to Drain Charge		--	7.7	--	

Reverse Diode Characteristics(T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=4A	--	3.3	--	V
		V_{GS}=0V, I_{SD}=4A, T_J=175°C	--	2.9	--	
I_S	Continuous Diode Forward Current	--	--	--	24	A
trr	Reverse Recover Time	V_{DD}=400V, I_{SD}=8.0A, dI_F /dt=850A/μs	--	13.5	--	ns
Qrr	Reverse Recovery Charge		--	38	--	nC

Typical Performance Characteristics

Fig 1. Output Characteristics T_j = 25°C

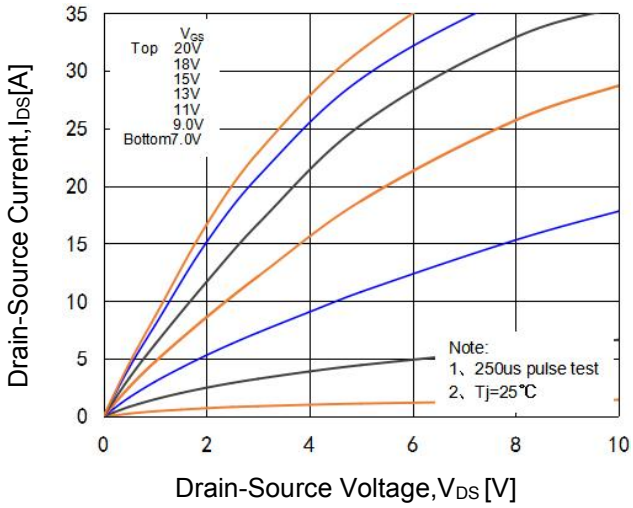


Fig 2.Transfer Characteristic for Various Junction Temperature

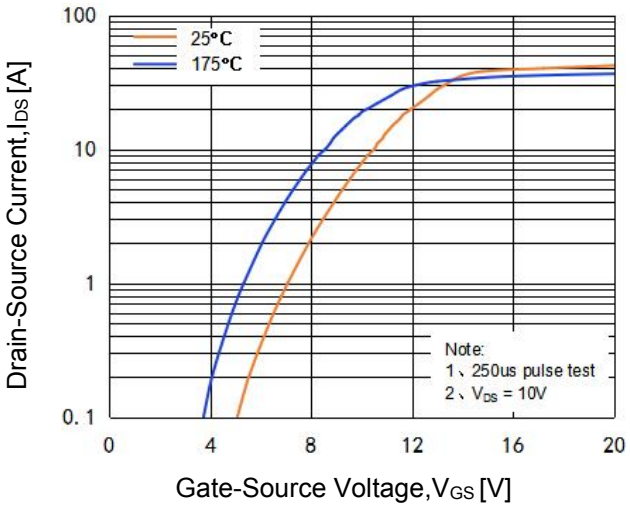


Fig 3. On-Resistance vs. Drain Current For Various Temperature

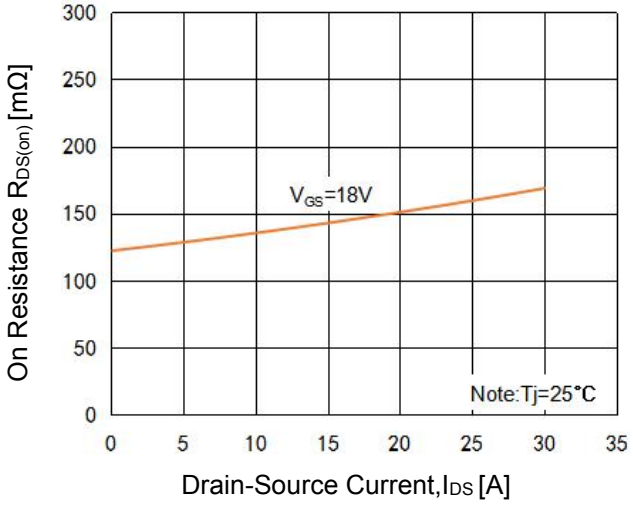


Fig 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

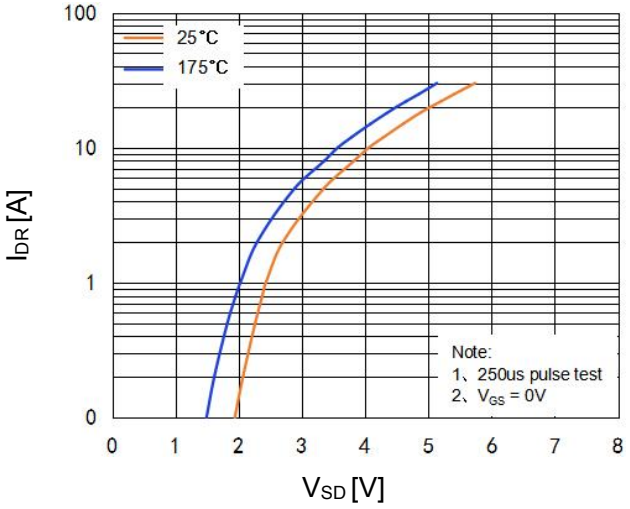


Fig 5. Capacitance vs.Drain-Source Voltage

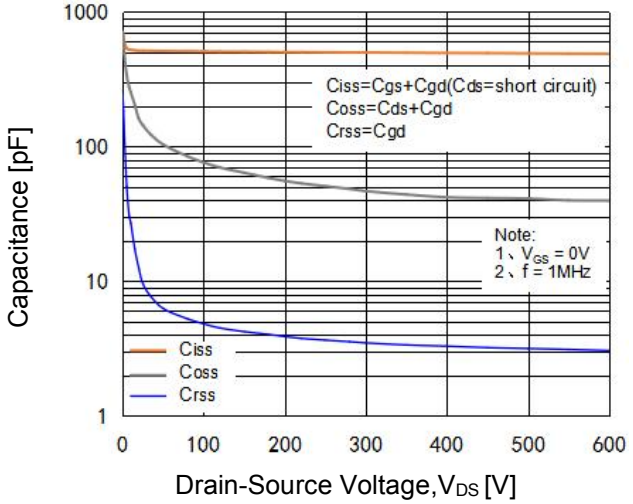


Fig 6. Gate Charge Characteristics

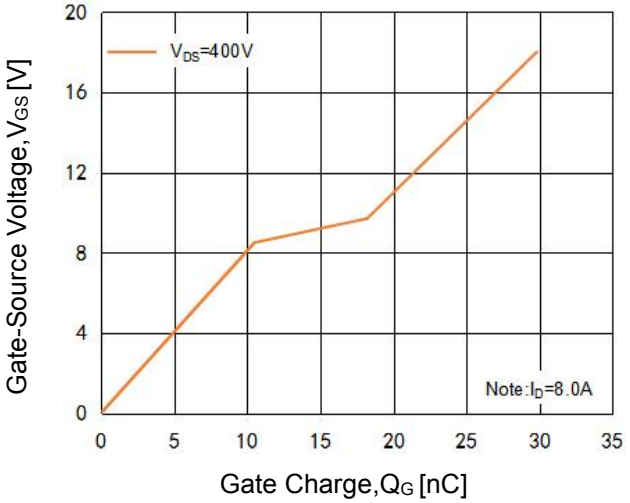


Fig 7. Threshold Voltage vs.Temperature

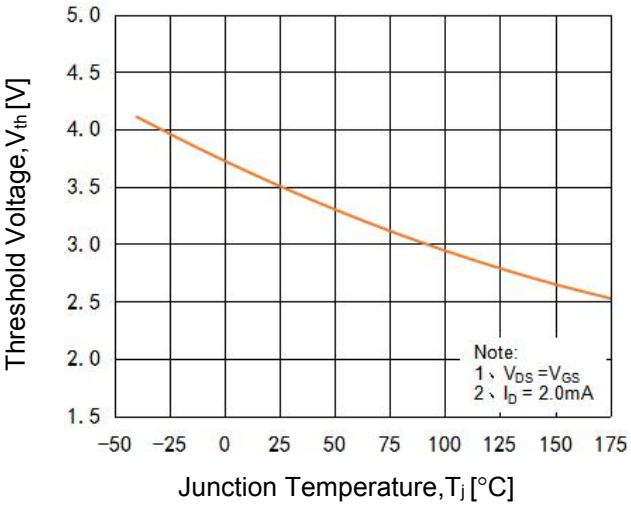


Fig 8. Normalized On-Resistance vs. Temperature

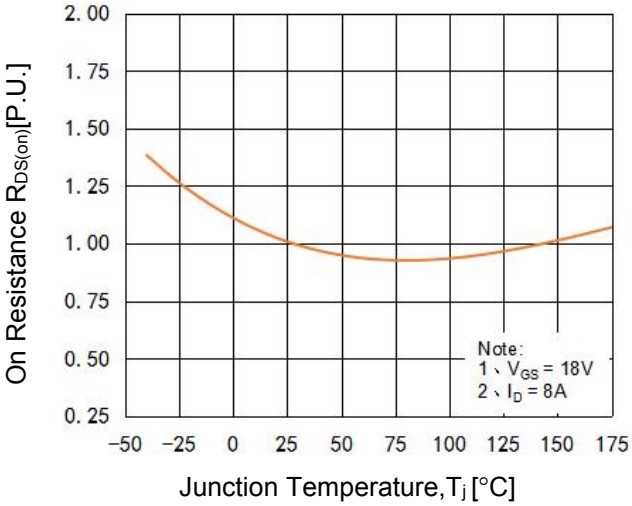


Fig 9. Maximum Power Dissipaion Derating vs. Case Temperature

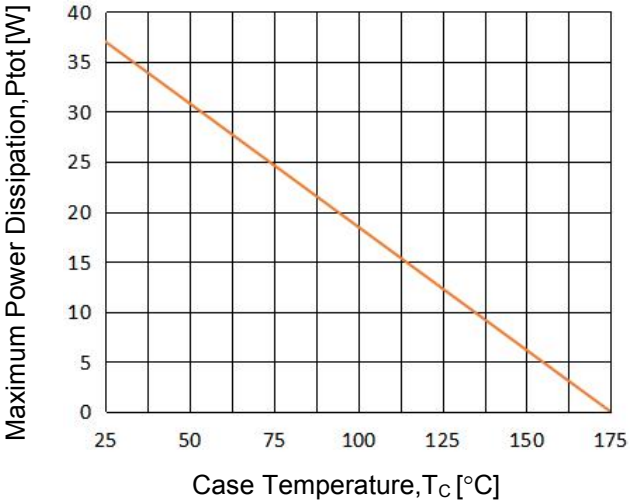
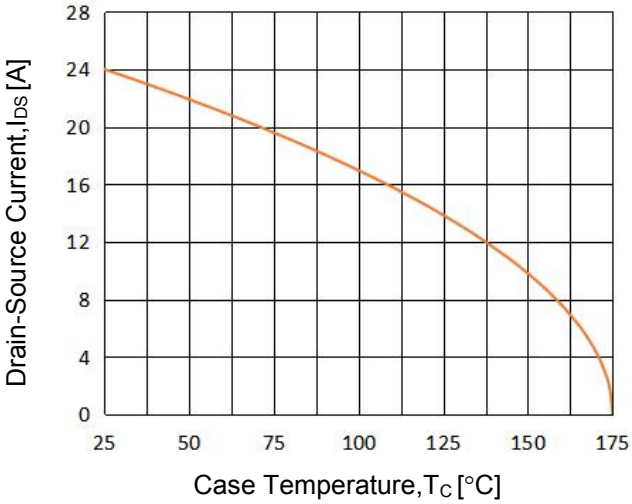


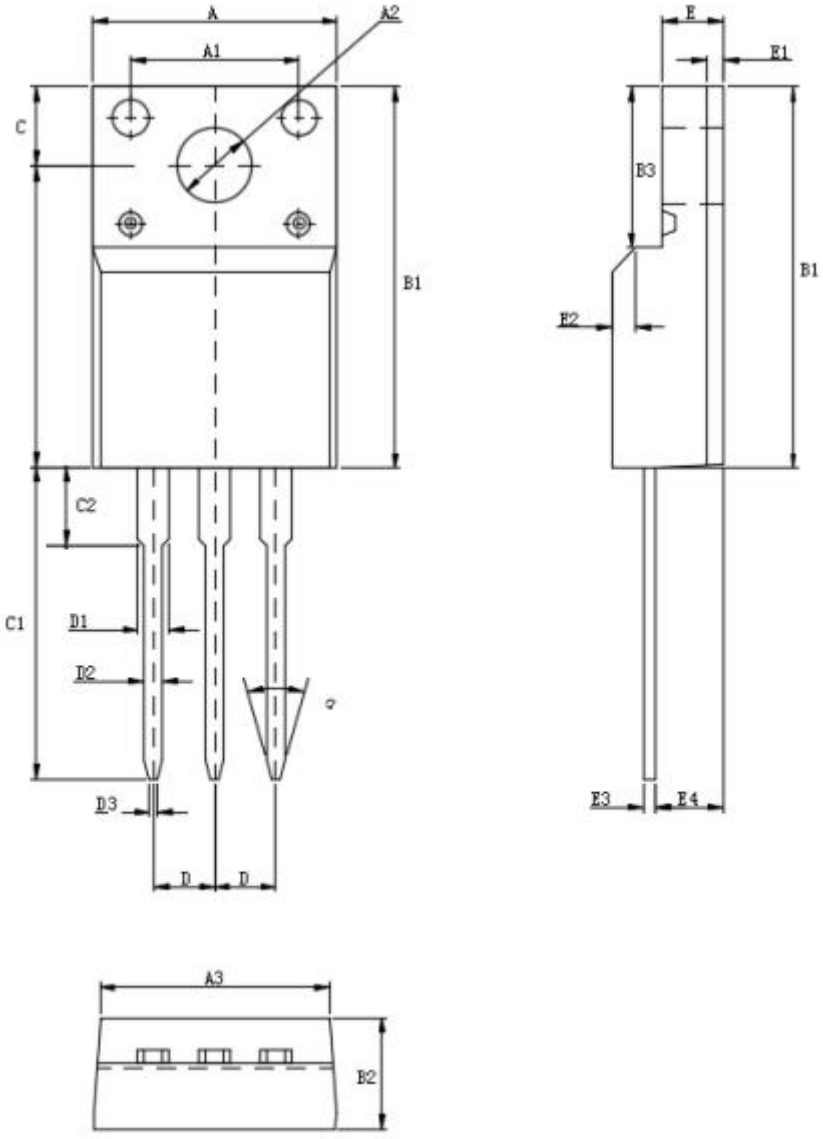
Fig 10. Continuous Drain Current Derating vs. Case Temperature



TO-220F Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	9.76	10.16	10.56	D	-	2.54	-
A1	-	7.00	-	D1	1.15	-	1.47
A2	2.93	3.18	3.43	D2	0.65	0.80	0.90
A3	9.10	9.50	9.90	D3	0.20	-	0.50
B1	15.37	15.87	16.37	E	2.24	2.54	2.84
B2	4.40	4.70	5.00	E1	-	0.70	-
B3	6.00	6.70	7.40	E2	-	1.0 × 45°	-
C	3.00	3.35	3.70	E3	0.40	0.50	0.60
C1	11.98	12.98	13.98	E4	2.30	2.80	3.30
C2	2.60	-	3.60	α（度）	-	30°	-



注意事项：

1、在电路设计时请不要超过器件的最大额定值，否则会影响整机的可靠性。

2、MOSFET产品为静电敏感型器件，使用时应注意采取防静电保护措施，如佩戴防静电手环、设备接地等。

3、如需安装散热片，请注意控制扭力大小及散热片的平整度。

4、该规格书由华科公司制作，并可能不定期更改，恕不另行通知。

5、如有疑问，请及时联系我司销售代表。

版本履历表：

序号	版本号	修改时间	修改记录
1	V1.0	2025-3-5	首次发行