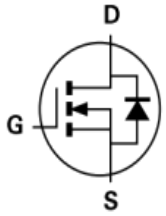
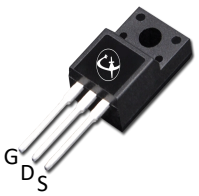
LSC140M65F

SiC N-Channel MOSFET

MAIN CHARACTERISTICS

I_D	18A
V_{DS}	800V
R_{DSON}-typ （@VGS=18V Tc=25°C）	128mΩ





TO-220F

Features

- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery (Qrr)
- Robust against Parasitic Turn on Even 0V Turn off Gate Voltage

Benefits

- Increased Power Density
- Reduced Switching Losses
- Reduction of Heat Sink Requirements
- Increased System Switching Frequency
- Reduced EMI

Application

- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power Applications

Product specification classification

Part Number	Package	Mode Name	Pack
LSC140M65F	TO-220F	LSC140M65F	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	-10/+22	V
Recommended Operation Value	VGSop	0/+18	V
Continue Drain Current TC=25℃	I_D	18	A
Continue Drain Current TC=100℃		14	A
Pulsed Drain Current (Note1)	I_{DM}	36	A
Power Dissipation	P_D	41	W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.6	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Electrical Characteristics at Tc=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 100μA	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	VDS = 800 V, VGS = 0 V	I_{DSS}	-	1	10	μA
Gate Leakage Current	V_{GS} = 18 V, V_{DS} = 0 V	I_{GSS}	-	-	250	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 3.5 mA	$V_{GS(th)}$	2.6	3.1	4.6	V
Drain-Source On-State Resistance	V_{GS} = 15 V, I_D = 8.5 A	$R_{DS(on)}$	-	190		mΩ
	V_{GS} = 15 V, I_D =8.5 A, T_J = 175℃		-	160	-	
	V_{GS} = 18 V, I_D = 8.5 A		-	128	167	
	V_{GS} = 18 V, I_D =8.5A, T_J = 175℃		-	135	-	
Input Capacitance	V_{GS} = 0 V, V_{DS} = 400 V, f = 1MHz	C_{iss}	-	492	-	pF
Output Capacitance		C_{oss}	-	40	-	pF
Reverse Transfer Capacitance		C_{rss}	-	4.2	-	pF
Internal Gate Resistance	f=1MHz	RG(int)	-	3.3	-	Ω
Total Gate Charge(Note2)	I_D = 8.5A, V_{DD} = 400 V, V_{GS} =0/18 V	Q_G	-	30.5	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	11.7	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	6.6	-	nC
Turn-on Delay Time(Note2)	VDS = 400 V, ID =8.5 A, VGS = 0/18 V, RG = 5 Ω	$t_{d(ON)}$	-	12.4	-	ns
Rise Time(Note2)		t_r	-	38.4	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	26.4	-	ns
Fall Time(Note2)		t_f	-	39.6	-	ns

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current	VGS=-4V Tc=25°C	I_S	-	18	-	A
	VGS=-4V Tc=100°C		-	14	-	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	22	A
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_{SD}=5A Tj=25°C	V_{SD}	-	3.4	-	V
Reverse Recovery Time(Note2)	VGS=-0V, ISD=8.5A, VR=400V, di/dt=800A/μs	trr	-	13.6	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	38.1	-	nC
Peak Reverse Recovery Current		Irrm	-	4.5	-	A

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

RATINGS AND CHARACTERISTIC CURVES

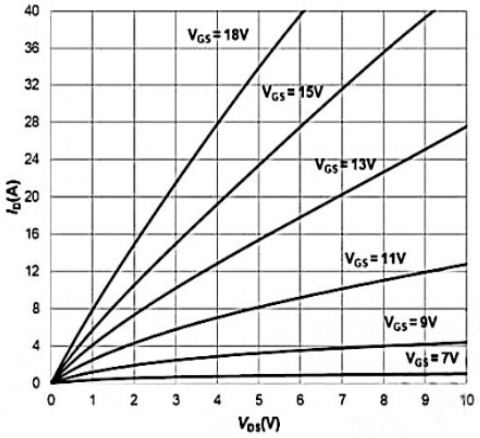


Fig1. Output Characteristics T_j=25℃

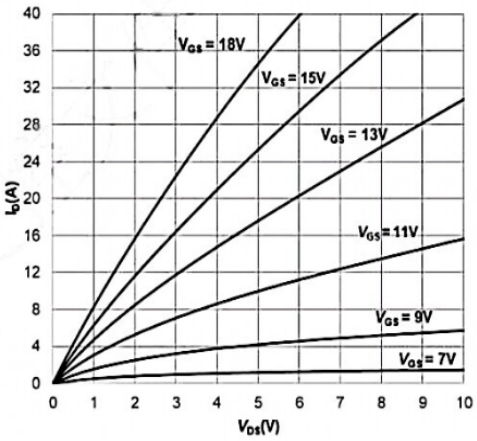


Fig2. Output Characteristics T_j=175℃

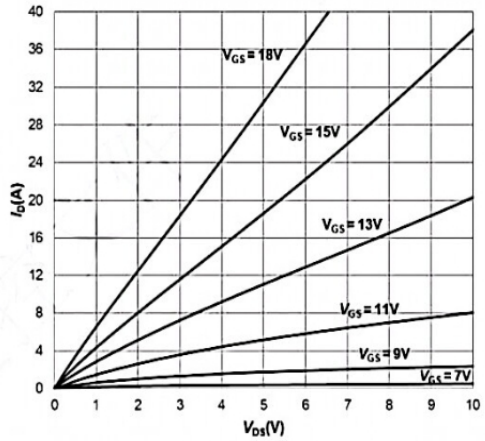


Fig3. Output Characteristics T_j=-40℃

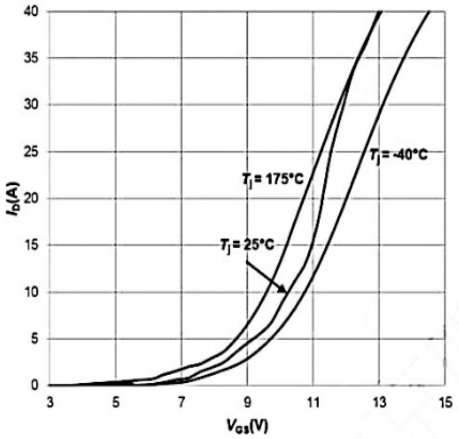


Fig4 . Typical Transfer Characteristics

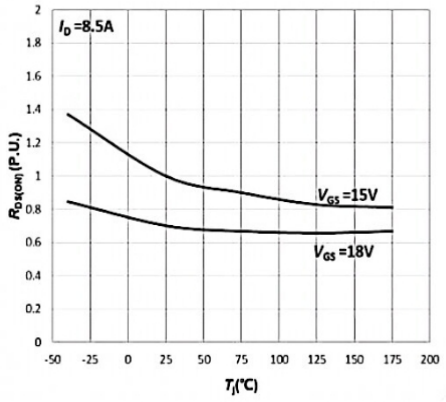


Fig5. Normalized On-Resistance vs. Temperature

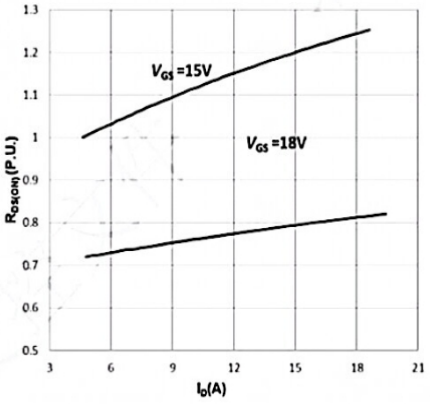


Fig6. Normalized On-Resistance vs. Drain Current For T_j=25℃

RATINGS AND CHARACTERISTIC CURVES

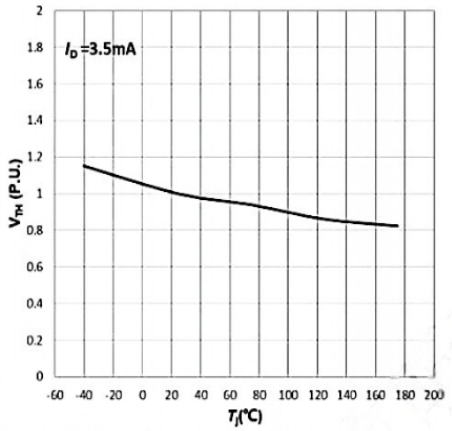


Fig7. Normalized Threshold Voltage vs. Temperature

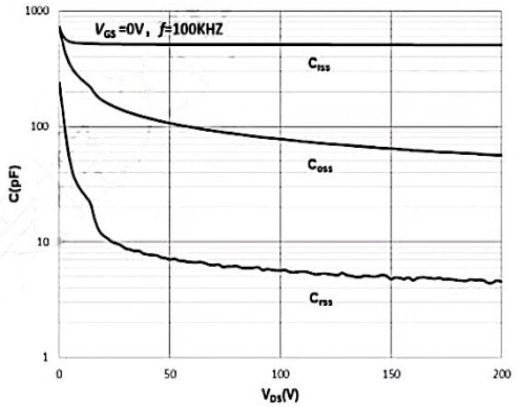


Fig8. Capacitances vs. Drain-Source Voltage (0-200V)

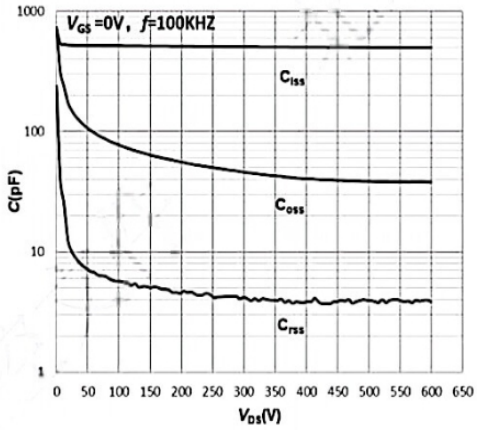


Fig9. Capacitances vs. Drain-Source Voltage (0-600V)

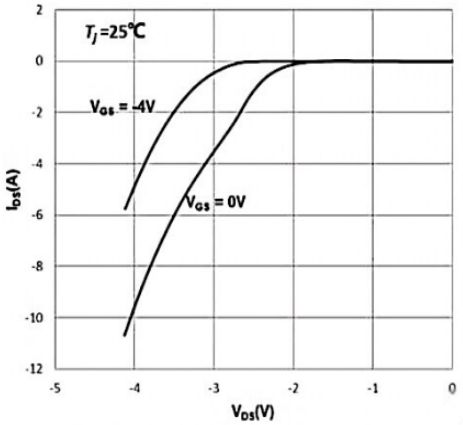


Fig10. Body Diode Characteristics

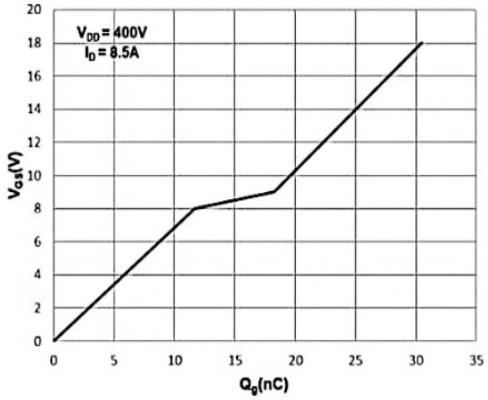


Fig11. Typical Gate Charge

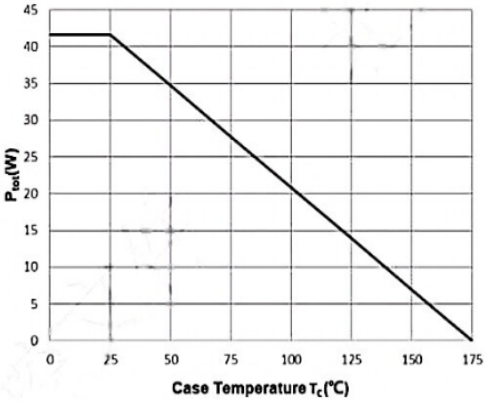


Fig12. Power Dissipation vs. Case Temperature

RATINGS AND CHARACTERISTIC CURVES

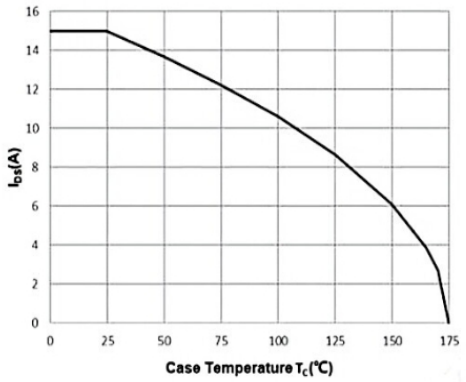
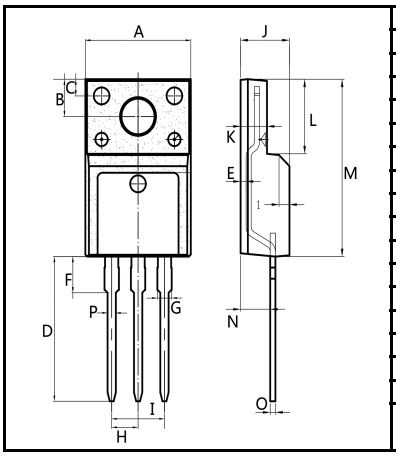


Fig13. Maximum DC Drain to Source Current vs. Case Temperature

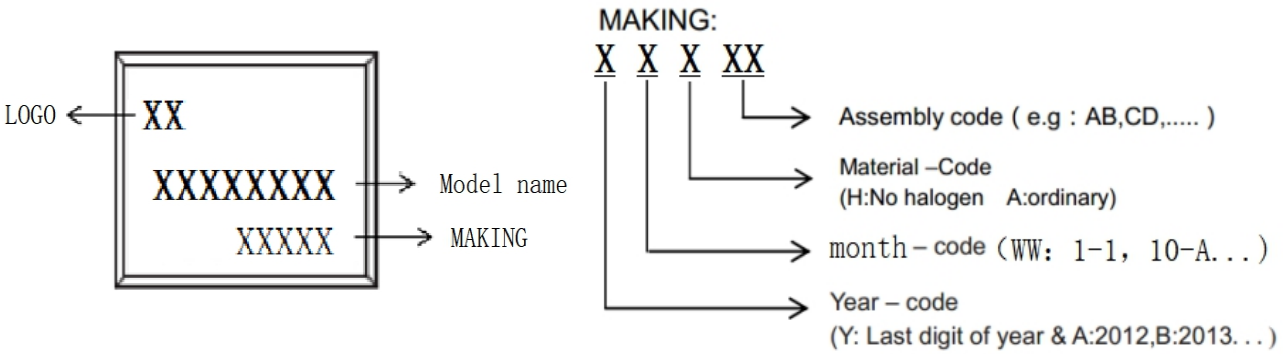
Package Outline Dimensions millimeters

TO-220F

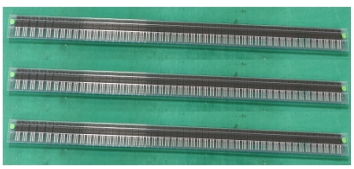
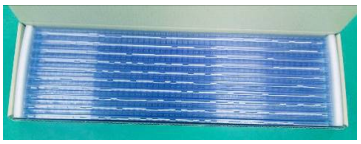


Dim.	Min.	Max.
A	9.95	10.35
B	2.95	3.25
C	1.25	1.45
D	12.8	13.2
E	0.4	0.6
F	2.8	3.5
G	1.3	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.5	5
K	2.45	2.65
L	6.5	6.8
M	15.4	16
N	2.75	3.05
O	0.45	0.55
P	0.7	0.9
All Dimensions in millimeter		

Marking on the body



packing instruction

PKG	Minimal Package	Mini Box	Box
TO-220F			
	50pcs/pdpe	1000pcs/box	5000pcs/box

Notice

All product,product specifications and data are subject to change without notice to improve.The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying poer exceeding normal rated

poer; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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Revision History

Rev	Changes	Date
1.0	First version	2026/1/23