



CSiC650165T3

Revision History

<u>Rev. No.</u>	<u>History</u>	<u>Issue Date</u>
1.0	New issue	Oct. 15,2025

Nano Meter Coated (NMC)SIC MOSFET

■ Features

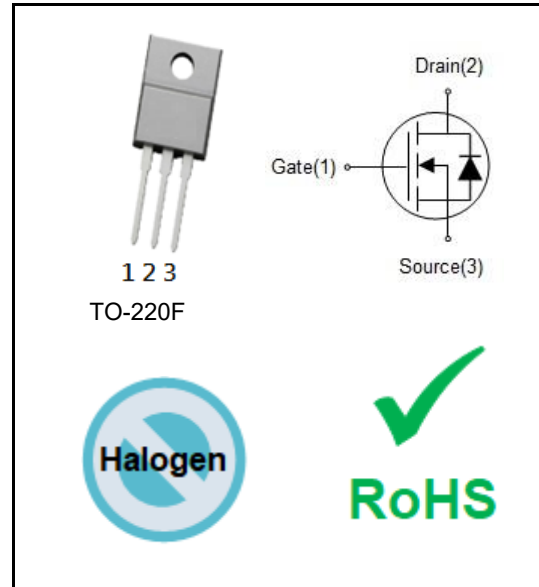
- Effectively lower down T_j and R_{th} , High anti- EMI ability
- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(ON)}$
- Easy to drive and parallel
- RoHS Compliant

■ Benefits

- Increased Power Density
- Higher Operating Frequency
- Reduced Heat Sink Requirements
- Higher Efficiency
- EMI Reduction

■ Applications

- Power Factor Correction Modules
- Switch Mode Power Supplies
- Power Inverters
- High Voltage Converters



Top Mark: CSiC650165T3

Ordering P/N: CSiC650165T3

Parameter	Value	Unit
V_{DS}	650	V
$I_D(T_C=25^{\circ}C)$	20	A
$R_{DS(ON)}$	165	mΩ

■ Absolute Maximum Ratings ($T_j=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V_{DS}	Drain-Source Voltage		650	V
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	20	A
		$T_C=100^{\circ}C$	16.5	A
I_{DM}	Peak Drain Current	Pulse width tp limited by T_{jmax}	100	A
V_{GSmax}	Gate-Source Voltage		0/26	V
V_{GSop}	Recommend Gate-Source Voltage		0/15	V
P_{tot}	Power Dissipation	$T_C=25^{\circ}C$	50	W
		$T_C=100^{\circ}C$	25	W
T_j	Operating Junction Temperature		-55~175	$^{\circ}C$
T_{stg}	Storage Temperature		-55~175	$^{\circ}C$

■ Electrical Characteristics

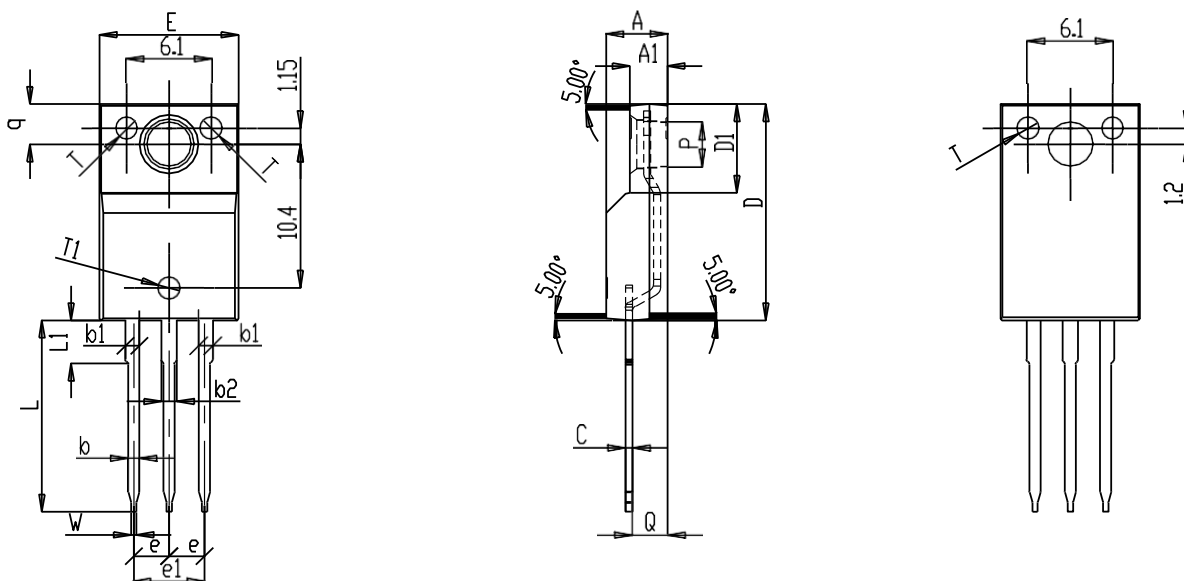
Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	650			V	$V_{GS} = 0V, I_D = 100\mu A$	
I_{DSS}	Zero Gate Voltage Drain Current		1		μA	$V_{GS} = 0V, V_{DS} = 650V$	
I_{GSS+}	Gate-Source Leakage Current			250	nA	$V_{DS} = 0V, V_{GS} = 15V$	
$V_{GS(th)}$	Gate Threshold Voltage	2.8	3.5	4	V	$V_{GS} = V_{DS}, I_{DS} = 6mA, T_J = 25^\circ C$	
			2.6			$V_{GS} = V_{DS}, I_{DS} = 6mA, T_J = 175^\circ C$	
$R_{DS(ON)}$	Static Drain-Source On-Resistance		160		m Ω	$V_{GS} = 15V, I_D = 6A, T_J = 25^\circ C$	
			195			$V_{GS} = 15V, I_D = 6A, T_J = 175^\circ C$	

■ Thermal Data

SYMBOL	PARAMETER	Typ.	UNIT
R_{thJC}	Thermal Resistance from Junction to Case (Note Fig.2)	3.12	$^\circ C/W$

■ Package Outline Dimension

TO-220F (Full Pack)



SYMBOL	MILLIMETERS			NOTES	SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.4	4.2	4.6		e1	5.08	5	5.12	
A1	2.7	2.5	2.9		L	13.90	13.5	14.4	
b	0.8	0.7	0.9		L1	3.12	2.8	3.3	
b1	1.07	0.9	1.3		P	3.14	3.00	3.20	
b2	1.17	1	1.4		Q	2.44	2.3	2.6	
C	0.5	0.4	0.6		q	2.87	2.6	3	
D	15.63	15.4	15.8		W	0.37	0.3	0.5	
D1	6.22	6	6.4		T	1.52	1.3	1.7	
E	10.06	9.7	10.3		T1	1.20	1.1	1.3	
e	2.54	2.5	2.58						