ASC20N3300MT4

3300V N-Channel MOSFET

Description

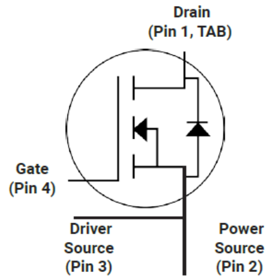
Silicon Carbide (SiC) MOSFET use a completely new technology that provide superior switching performance and higher reliability compared to Silicon. In addition, the low ON resistance and compact chip size ensure low capacitance and gate charge. Consequently, system benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size.

Features

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low RDS(on)
- Simple to drive with Standard Gate Drive
- 100% avalanche tested
- Maximum junction temperature of 150°C
- ROHS Compliant

Application

- EV Charging
- DC-AC Inverters
- High Voltage DC/DC Converters
- Switch Mode Power Supplies
- Power Factor Correction Modules
- Motor Drives



Ordering Information

Part Number	Marking	Package	Packaging
ASC20N3300MT4	ASC20N3300MT4	TO-247	Tube

Absolute Maximum Ratings(Tc=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	3300	V
I_D	Drain Current(continuous)at Tc=25℃	20	A
I_D	Drain Current(continuous)at Tc=100℃	12	A
I_{DM}	Drain Current (pulsed)	40	A
V_{GS}	Gate-Source Voltage	-10/+25	V
P_D	Power Dissipation T_C = 25°C	152	W
T_J, Tstg	Junction and Storage Temperature Range	-55 to +150	℃

Electrical Characteristics(T_J = 25℃ unless otherwise specified)

Typical Performance-Static

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-source Breakdown Voltage	I_D=250uA,V_{GS}=0V	3300			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =3300V, V_{GS} =0V, T_J=25°C			100	uA
I_{GSS}	Gate-body Leakage Current	V_{DS} =0V ; V_{GS} =-10 or 20V			250	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=5mA	2		4	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS}=20V, I_D=10A		250	300	mΩ
R_G	Gate Resistance	V_{GS}=0V,f=1MHz		3		Ω

Typical Performance-Dynamic

C_{iss}	Input Capacitance	V_{DS}=800V,f=1000KHz,V_{GS}=0V		600		pF
C_{oss}	Output Capacitance			50		pF
C_{rss}	Reverse Transfer Capacitance			8		pF
Q_g	Total Gate Charge	V_{DS}=800V, I_D=10A,V_{GS}=0~20V		9		nC
Q_{gs}	Gate-source Charge			11		nC
Q_{gd}	Gate-Drain Charge			30		nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=800V,ID=10A, V_{GS}=-0V~20V, R_G=0Ω,		7		ns
t_r	Rise Time			8		ns
$t_{d(off)}$	Turn-off Delay Time			12		ns
t_f	Fall Time			13		ns

Typical Performance-Reverse Diode

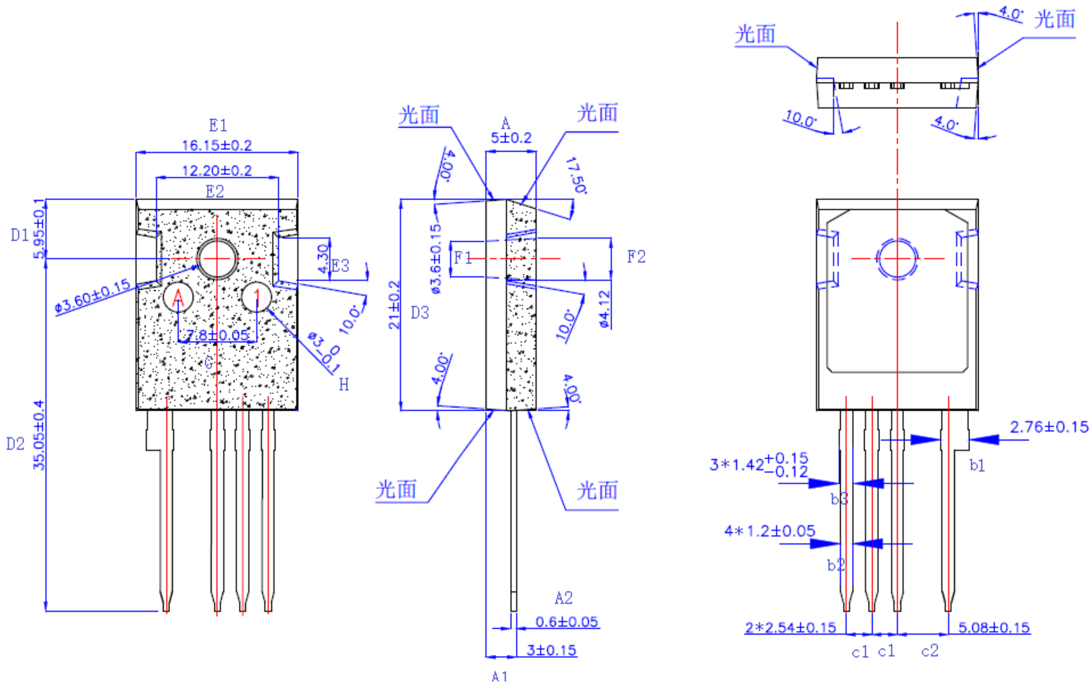
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{FSD}	Forward Voltage	V_{GS}=0V,I_F=10A,T_J=25°C	3		6	V
		V_{GS}=0V,I_F=10A,T_J=150°C	3		6	V
t_{rr}	Reverse Recovery Time	V_{GS}=0 V, I_F=10 A, V_R=800 V, d*i*/d*t*= 100 A/μs		9		ns
Q_{rr}	Reverse Recovery Charge			11		nC
I_{rrm}	Peak Reverse Recovery Current			29		A

Thermal Characteristics

Symbol	Parameter	Value.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.82	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Case	40	°C/W

The values are based on the junction-to case thermal impedance which is measured with the device mounted to a large heat sink assuming maximum junction temperature of Tj(max)=150℃

Package Drawing:



Dimensions（ UNIT：mm）

SYM	MILLIMETERS		SYM	MILLIMETERS	
	MIN	MAX		MIN	MAX
A	4.98	5.02	D2	34.65	35.45
A1	2.85	3.15	D3	20.80	21.20
A2	0.55	0.65	E1	15.95	16.35
b1	2.61	2.91	E2	12.00	12.40
b2	1.15	1.25	F1	3.45	3.75
b3	1.30	1.57	F2	4.12	4.12
c1	2.39	2.69	G	7.75	7.85
c2	4.93	5.23	H	2.90	3.10
D1	5.85	6.05			