SC1R0N330H7-R

4.5Amps,3300 Volts N-Channel Sic Power MOSFET

Features

- 4.5A,3300V,$R_{DS(ON)MAX}$= 1000m Ω @V_{GS}=20V/1A
- High Blocking Voltage with low On-Resistance
- High Speed Switching with Low Capacitance
- Fast Intrinsic Diode with Low Reverse Recovery(Qrr)

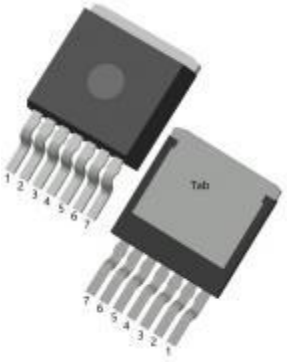
Benefits

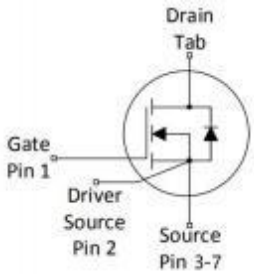
- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequencytance
- Easy to Parallel and Simple to Drive
- Enable Totem-Pole PFC Topologies

Applications

- Solar Inverters
- Server Power Supplies
- Solar PV Inverters
- UPS
- DC/DC Converters

TO-263-7H





Absolute Maximum Ratings(T_C=25℃,unless otherwise noted)

Parameter	Symbol	Value	UNIT	Test Conditions
Drain-Source Voltage	V_{DSmax}	3300	V	V_{GS}=0V, I_{DS}= 100μA
Gate-Source Voltage(dynamic)	V_{GSmax}	-10/+25		Absolute maximum values
Gate-Source Voltage (static)	V_{GSop}	-5/+20		Recommended operational values
Continuous Drain Current	I_D	4.5	A	V_{GS}=20V,Tc=25℃
		2.5		V_{GS}=20V,Tc=100℃
Power Dissipation	P_D	62.5	W	T_c=25℃, T_J= 150℃
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55to +150	℃	

Electrical Characteristics (T_c=25℃,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D= 100uA	3300	–	–	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=3300V,V_{GS}=0V	–	1	100	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=20V,V_{DS}=0V	–	20	200	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=2.5mA	2	3	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=20V,I_D= 1A	–	650	800	mΩ
		V_{GS}=20V,I_D= 1A, T_J=175℃	–	1400	–	
Input Capacitance	C_{iss}	V_{DS}= 1500V,V_{GS}=0V, f= 100KHZ,V_{AC}=25mV	–	800	–	pF
Output Capacitance	C_{oss}		–	26	–	pF
Reverse Transfer Capacitance	C_{rss}		–	3.2	–	pF
Turn-On Switching Energy	E_{ON}	V_{DS}= 1000V,V_{GS}=-5V/20V I_D=1A	–	TBD	–	μJ
Turn-Off Switching Energy	E_{OFF}		–	TBD	–	μJ
Internal Gate Resistance	R_G	f= 1MHz, V_{AC}=25mV	–	TBD	–	Ω
Total Gate Charge	Qg	V_{DS}= 1000V,I_D=1A, V_{GS}=-5V/20V	–	TBD	–	nC
Gate-Source Charge	Qgs		–	TBD	–	
Gate-Drain Charge	Qgd		–	TBD	–	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=-5V, I_{SD}= 1A	–	4.0	–	V
		V_{GS}=-5V, I_{SD}= 1A, T_J=175℃	–	3.8	–	
Continuous Diode Forward Current	I_S	T_C=25℃	–	–	4	A
Reverse Recover Time	t_{rr}	V_R= 1000V, I_{SD}=1A	–	TBD	–	ns
Reverse Recovery Charge	Q_{rr}		–	TBD	–	nc
Peak Reverse Recovery Current	I_{rrm}		–	TBD	–	A

RATINGAND CHARACTERISTIC CURVES

Figure 1. Output Characteristics T_J =25℃

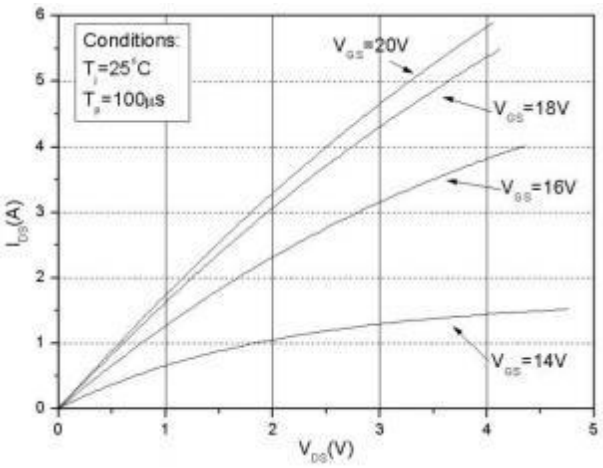


Figure 2. Output Characteristics T_J = 175℃

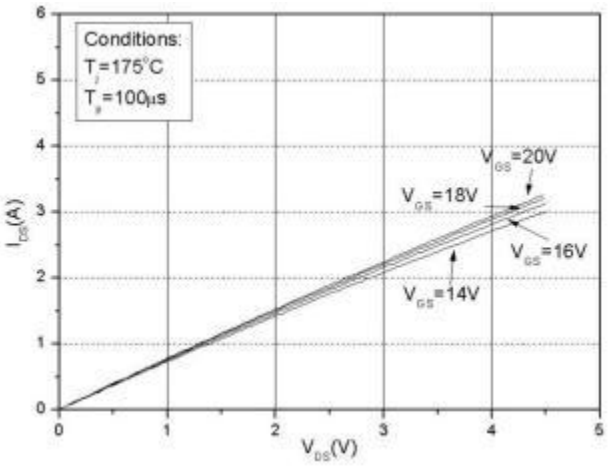


Figure 3.Capacitances vs. Drain-Source Voltage

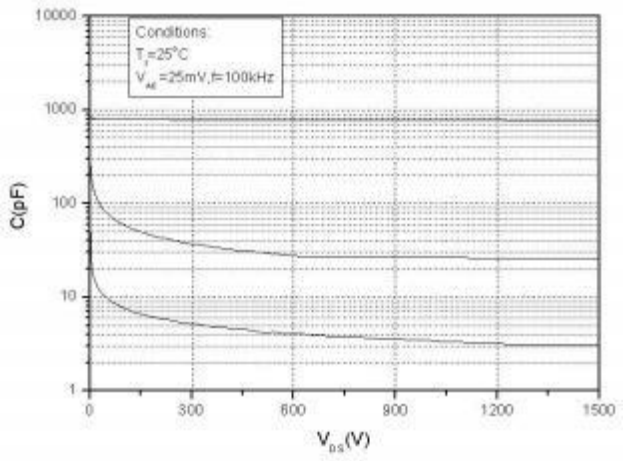


Figure 4.Body Diode Characteristics T_J =25℃

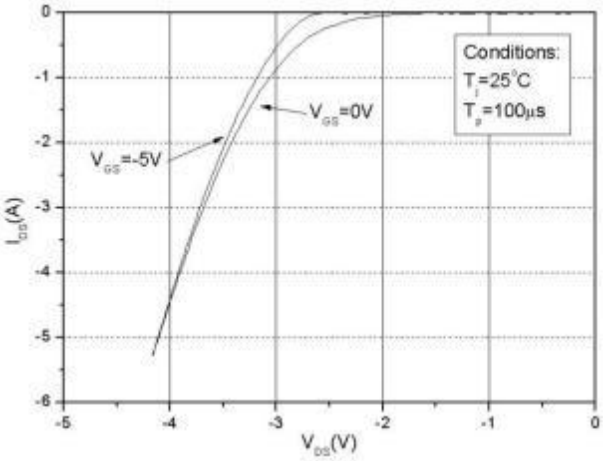
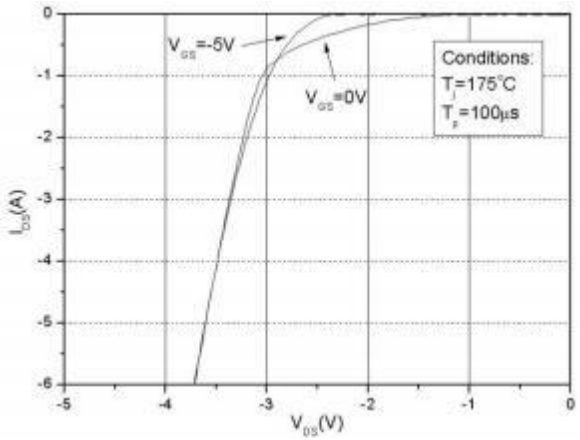
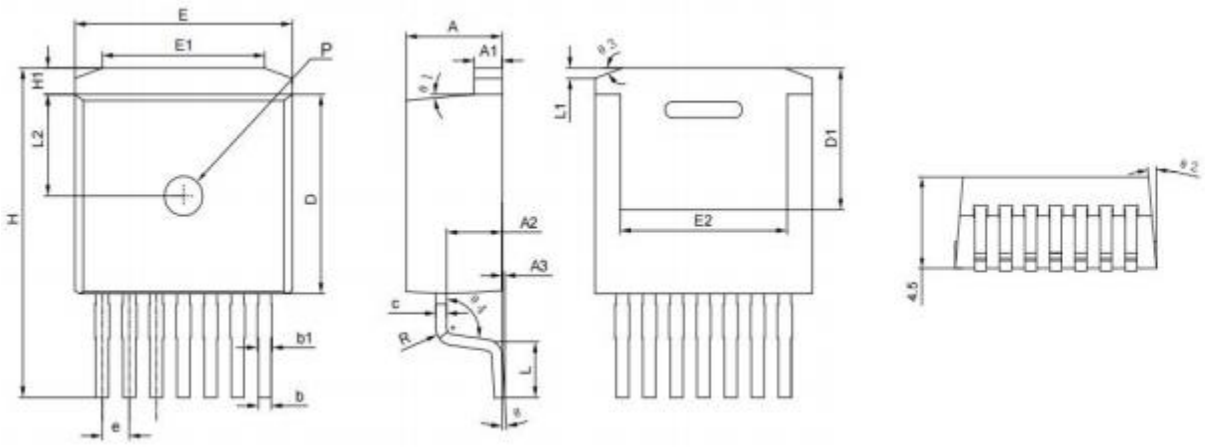


Figure 5. Body Diode Characteristics T_J = 175℃



Package Outline: TO-263-7H



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.40	4.60	0.173	0.181
A1	1.25	1.40	0.049	0.055
A2	2.45	2.70	0.096	0.106
A3	0.05	0.20	0.002	0.008
b	0.50	0.70	0.020	0.028
b1	0.60	0.85	0.024	0.033
c	0.45	0.60	0.018	0.024
D	8.88	9.28	0.350	0.365
D1	6.25	6.65	0.246	0.262
E	9.18	10.28	0.361	0.405
E1	6.67	7.47	0.263	0.294
E2	7.67	7.97	0.302	0.314
e	1.27		0.050	
H	14.80	15.20	0.583	0.598
H1	1.10	1.30	0.043	0.051
L	2.35	2.75	0.093	0.108
L1	0.37	0.77	0.015	0.030
L2	4.48	4.78	0.176	0.188
θ	0°	5°	0°	5°
θ1	3°	7°	3°	7°
θ2	3°	7°	3°	7°
θ3	15°	25°	15°	25°
θ4	93°	100°	93°	100°
R	0.75	0.85	0.030	0.033
p	1.70	1.90	0.067	0.075

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