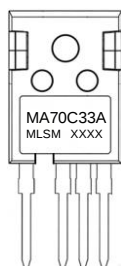


Features

- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery(Qrr)
- Easy to Parallel and Simple to Drive

Application

- Power Factor Correction Modules
- Switch Mode Power Supplies



1 2 3 4
Marking and pin assignment

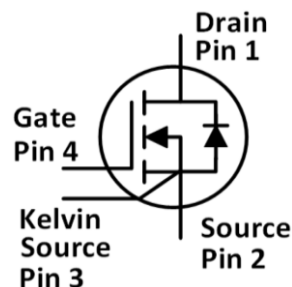
MA70C33A= Device code
XXXX= Code

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
3300V	70mΩ@20V	45A



TO-247-4L top view



Schematic diagram



Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	3300	V
V_{GS}	Gate-Source Voltage	-10/+25	V
V_{GSop}	Recommended Operation Voltage of Gate to Source	-5/+20	V
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	°C
I_S	Diode Continuous Forward Current	Tc=25°C 45	A
I_{DM}	Pulse Drain Current Tested	Tc=25°C 80	A
		Tc=100°C 64	A
I_D	Continuous Drain Current	Tc=25°C 45	A
		Tc=100°C 35	A
P_D	Maximum Power Dissipation	Tc=25°C 600	W
$R_{th(j-c)}$	Thermal Resistance from Junction-Case	0.25	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MA70C33A	TO-247-4L	MA70C33A	30	270	2,160	Tube

Electrical Characteristics (T _J =25℃ unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T _J = 25℃ (unless otherwise stated)						
B _{V(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =100uA	3300	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =3300V, V _{GS} =0V	--	--	10	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =25V, V _{DS} =0V	--	--	100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =10mA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =20V, I _D =20A	--	70	98	mΩ
		V _{GS} =20V, I _D =20A, T _J =175℃	--	189	--	mΩ
Dynamic Electrical Characteristics @ T _J = 25℃ (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =1000V, V _{GS} =0V, f=1MHz	--	5199	--	pF
C _{OSS}	Output Capacitance		--	100	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	16	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =1200V, I _D =20A, V _{GS} =-5/20V	--	290	--	nC
Q _{gs}	Gate Source Charge		--	56	--	nC
Q _{gd}	Gate Drain Charge		--	57	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =1200V, I _D =20A, V _{GS} =-5/20V, R _G =3Ω	--	39	--	nS
t _r	Turn-on Rise Time		--	26	--	nS
t _{d(off)}	Turn-Off Delay Time		--	55	--	nS
t _f	Turn-Off Fall Time		--	22	--	nS
R _g	Gate Resistance	V _{AC} =25mV, f=1MHz	--	0.85	--	Ω
Source Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25℃, V _{GS} =-5V, I _S =20A	--	6.5	--	V
I _S	Continuous Diode Forward Current	V _{GS} =-5V, T _J =25℃	--	45	--	A
t _{rr}	Reverse Recovery Time	V _{GS} = -5V, I _{SD} =20A, V _{DS} =1200V, di/dt=500A/us, T _J =25℃	--	41	--	ns
Q _{rr}	Reverse Recovery Charge		--	150	--	nC
I _{rrm}	Peak Reverse Recovery Current		--	8.9	--	A

Typical Operating Characteristics

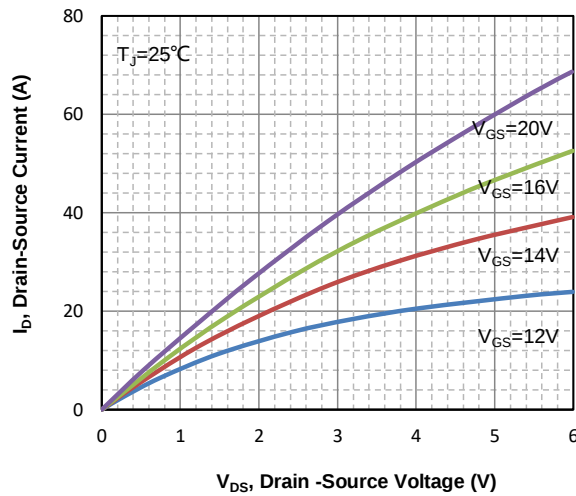


Fig1. Typical Output Characteristics

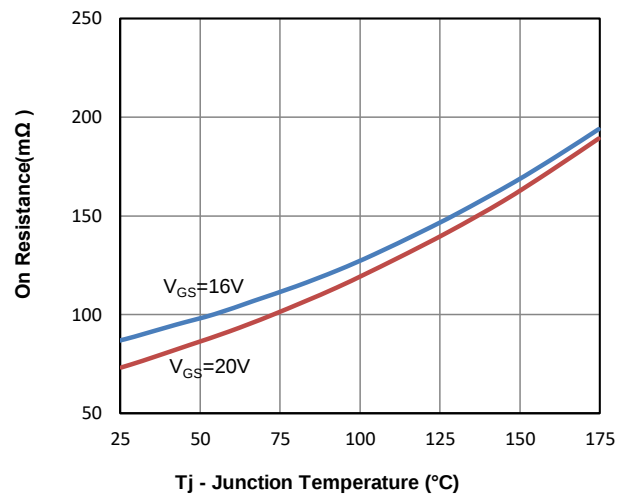


Fig2. Normalized On-Resistance Vs. Temperature

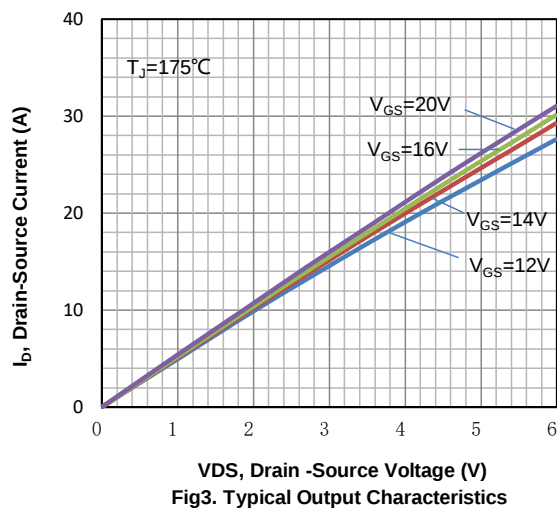


Fig3. Typical Output Characteristics

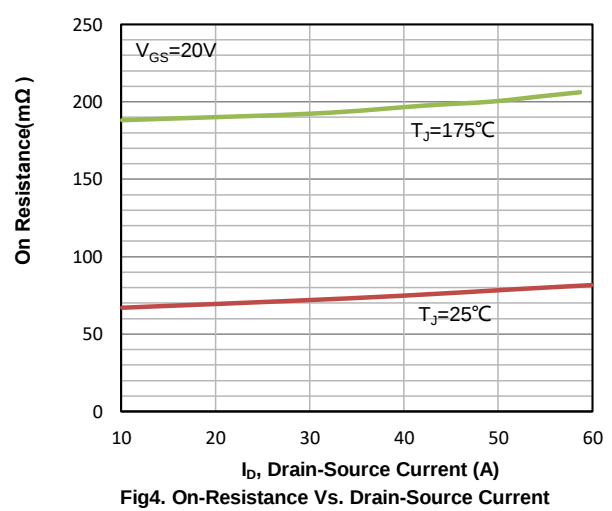


Fig4. On-Resistance Vs. Drain-Source Current

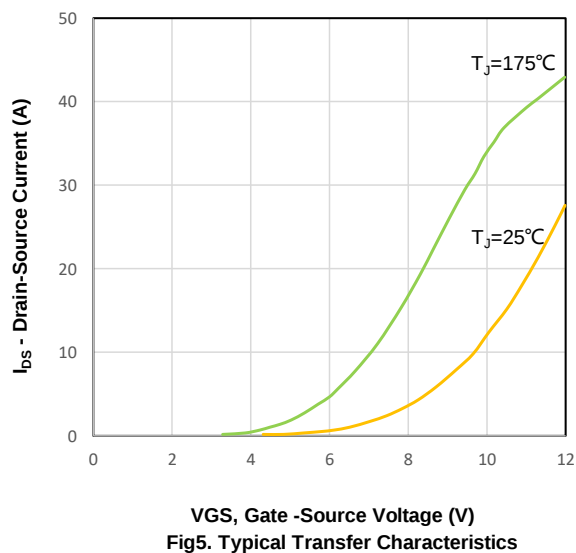


Fig5. Typical Transfer Characteristics

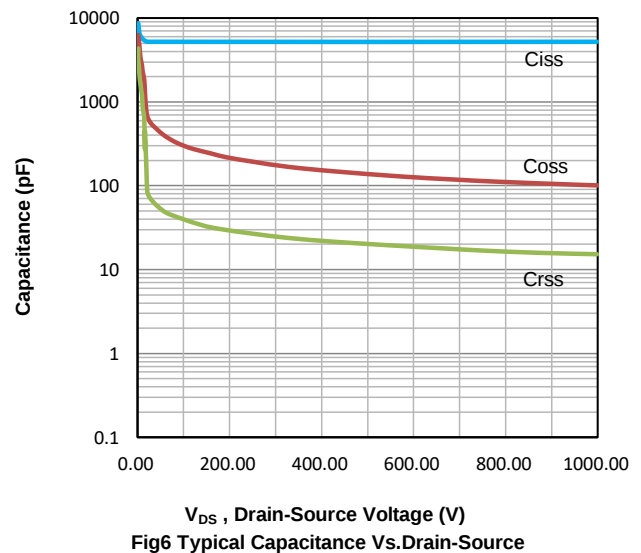
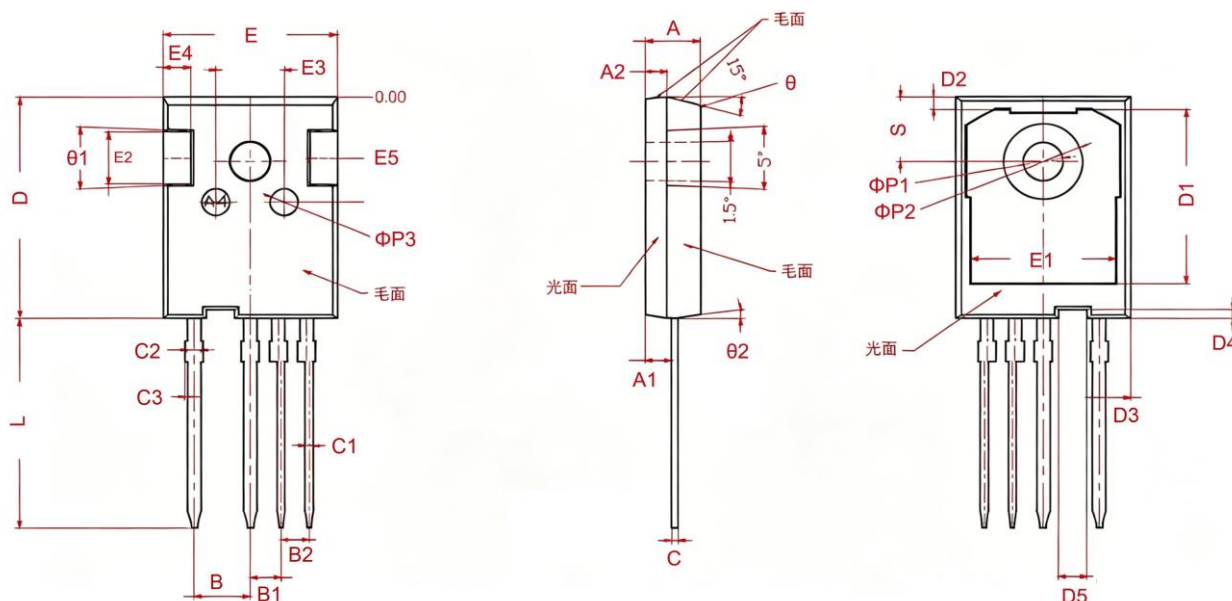


Fig6 Typical Capacitance Vs. Drain-Source

TO-247-4L Package information


Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	4.900	5.100	0.192	0.200
A1	2.300	2.500	0.090	0.098
A2	1.900	2.100	0.074	0.082
B	5.060	5.100	0.199	0.200
B1	2.790BSC		0.109BSC	
B2	2.540BSC		0.100BSC	
C	0.590	0.610	0.023	0.024
C1	0.700BSC		0.027BSC	
C2	1.180	1.220	0.046	0.048
C3	0.000	0.200	0.000	0.007
D	20.900	21.100	0.822	0.830
D1	16.450	16.650	0.647	0.655
D2	1.070	1.270	0.042	0.050
D3	3.820	4.020	0.150	0.158
D4	0.800	0.850	0.031	0.033
D5	2.480	2.680	0.097	0.105
E	15.700	15.900	0.618	0.625
E1	13.160	13.360	0.518	0.525
E2	4.900	5.100	0.192	0.200
E3	6.000	6.400	0.236	0.251
E4	2.400	2.600	0.094	0.102
E5	5.700	5.900	0.224	0.232
L	19.720	20.120	0.776	0.792
S	6.050	6.250	0.238	0.246
ΦP1	3.500	3.700	0.137	0.145
ΦP2	7.090	7.290	0.279	0.287
ΦP3	2.400	2.600	0.094	0.102
θ	5°TYP		5°TYP	
θ1	15°TYP		15°TYP	
θ2	3°	7°	3°	7°