

Features

- SGT MOSFET technology
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handling capability
- Lead free product is acquired

Application

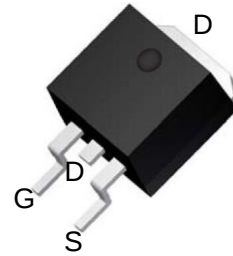
- DC/DC converters
- Load Switch
- Power Management



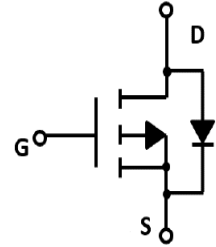
MB0E200AQ: Device code
XXXX : Code

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-40V	2.5mΩ@-10V	-200A
	3.5mΩ@-4.5V	



TO-263 top view



Schematic diagram



Marking and pin assignment

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		-40	V
V _{GS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-50 to 155	°C
I _S	Diode Continuous Forward Current		-200	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested		-680	A
I _D	Continuous Drain Current	Tc=25°C	-200	A
E _{AS}	Avalanche energy		400	mJ
P _D	Maximum Power Dissipation	Tc=25°C	200	W

Ordering Information (Example)						
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MB0E200AQ	TO-263	MB0E200AQ	800	800	4,000	13"reel

Electrical Characteristics (TJ=25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-40	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-40V, V _{GS} =0V	--	--	-1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.8	-2.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-75A	--	1.9	2.5	mΩ
		V _{GS} =-4.5V, I _D =-75A	--	2.6	3.5	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, f=1MHz	--	11200	--	pF
C _{OSS}	Output Capacitance		--	6050	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	380	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-20V, I _D =-20A, V _{GS} =-10V	--	137	--	nC
Q _{gs}	Gate Source Charge		--	60.8	--	nC
Q _{gd}	Gate Drain Charge		--	52.6	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =-10V, R _L =1Ω, V _{GS} =-20V, R _G =3Ω	--	19.5	--	nS
t _r	Turn-on Rise Time		--	3.6	--	nS
t _{d(off)}	Turn-Off Delay Time		--	23	--	nS
t _f	Turn-Off Fall Time		--	38	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=-75A,	--	--	-1.2	V

Note:

1: EAS condition: V_{DD}=-30V, L=0.5mH, V_{GS}=-10V, I_{AS}=-40A Starting T_J = 25°C

Typical Operating Characteristics

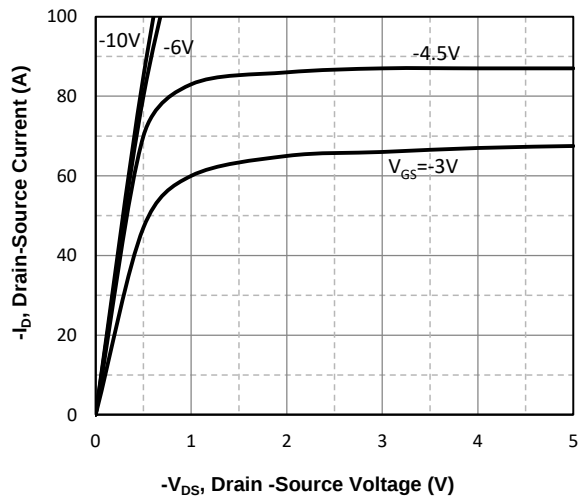


Fig1. Typical Output Characteristics

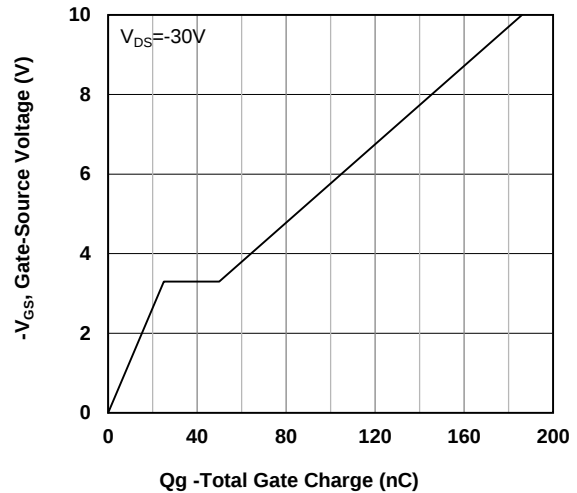


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

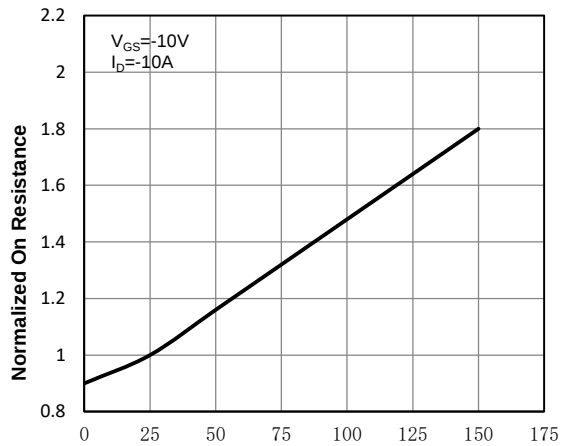


Fig3. Normalized On-Resistance Vs. Temperature

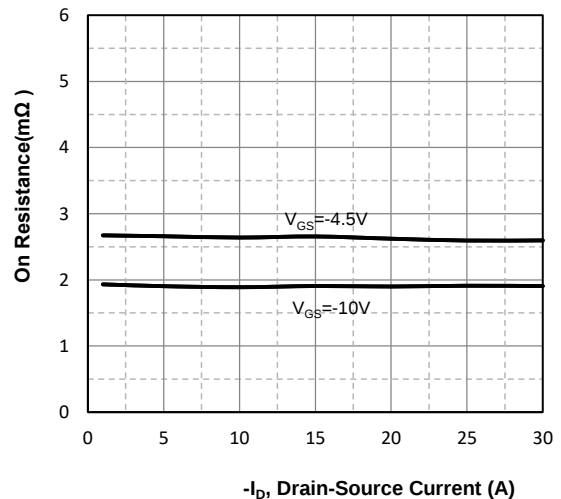


Fig4. On-Resistance Vs. Drain-Source Current

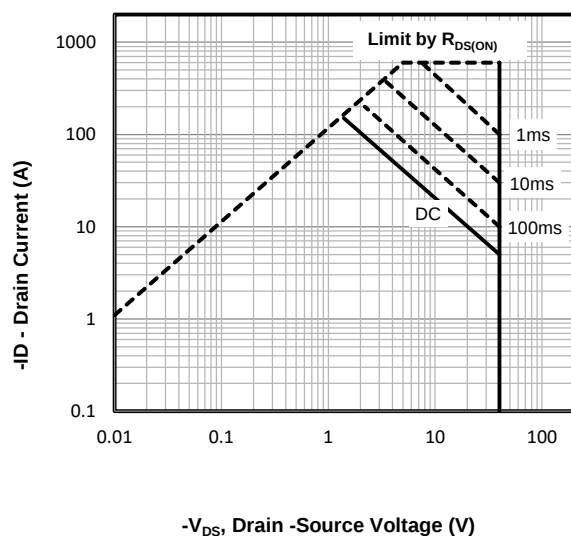


Fig5. Maximum Safe Operating Area

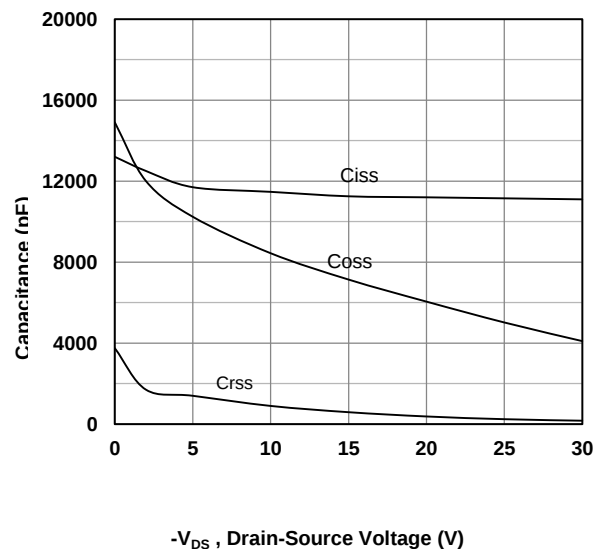


Fig6 Typical Capacitance Vs. Drain-Source Voltage