MB0E200AQ

-40V/-200A N-Channel MOSFET

Features

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

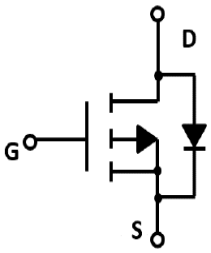
Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
-40V	1.9mΩ@-10V	-200A
	2.6mΩ@-4.5V	

Application

- DC/DC converters
- Load Switch
- Power Management

TO-263 top view



Schematic diagram

MB0E200AQ: Device code
XXXX : Code

Marking and pin assignment

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃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

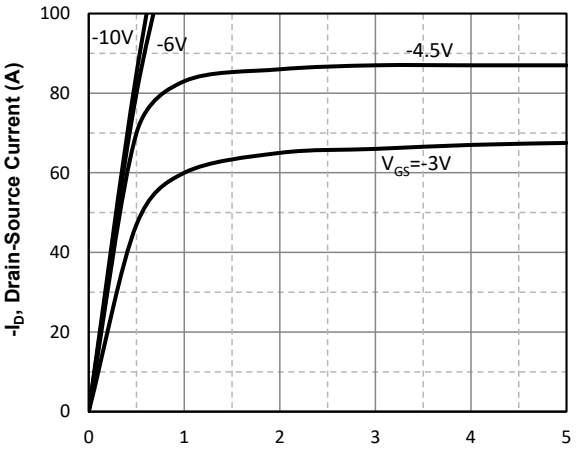
Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MB0E200AQ	TO-263	MB0E200AQ	800	800	4,000	13"reel

Electrical Characteristics (TJ=25℃ 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℃，Is=-75A，	--	--	-1.2	V

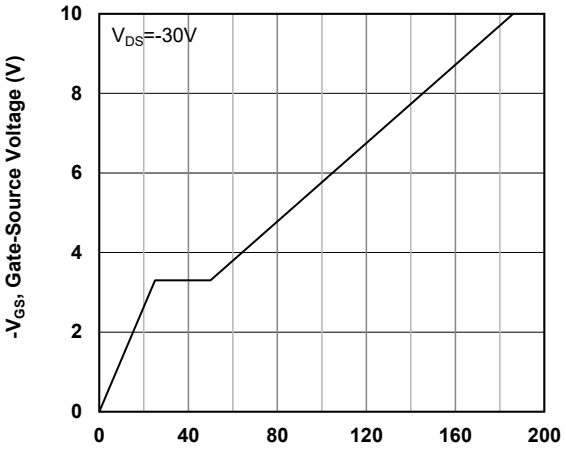
Note：

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

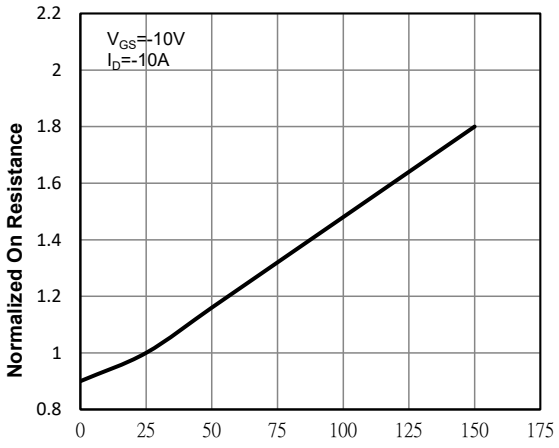
Typical Operating Characteristics



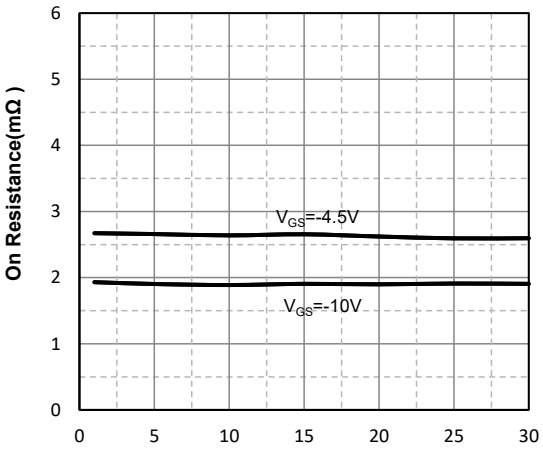
$-V_{DS}$, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



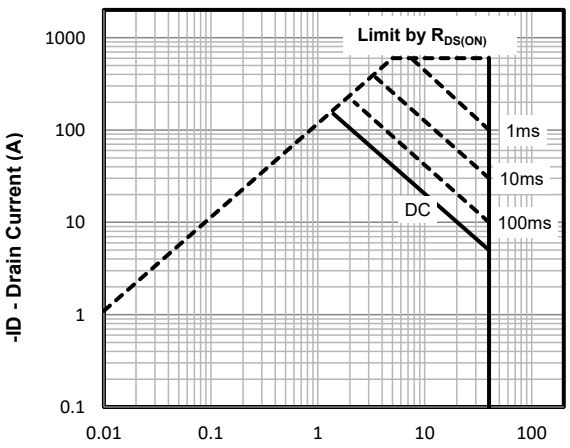
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



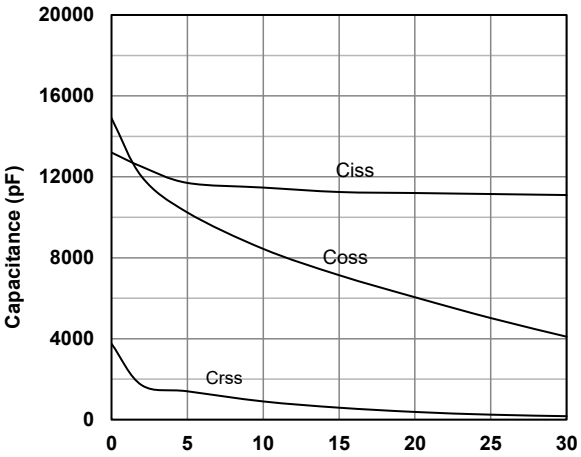
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



$-I_D$, Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current



$-V_{DS}$, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



$-V_{DS}$, Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs.Drain-Source Voltage