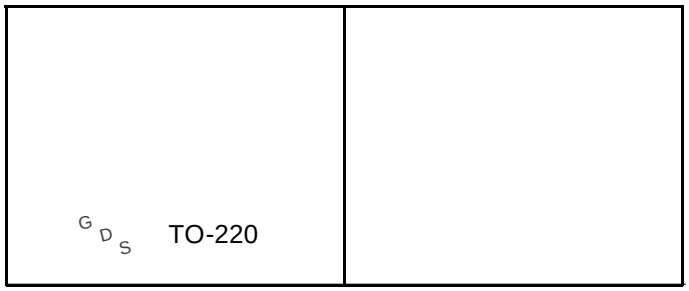
Features

- BV_{DSS}=100V, I_D=87A
- $R_{DS(on)}$:6.5mΩ(Max) ! V_{GS}=10V
- $R_{DS(on)}$:9.0mΩ(Max) ! V_{GS}=4.5V
- N-Channel，5V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5V
- 100% Avalanche test



Device Marking and Package Information		
Ordering code	**Package**	**Marking**
MPGP10R065	TO-220	MPGP10R065

Maximum ratings, at T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		100	V
V_{GS}	Gate-Source voltage		±20	V
I_S	Diode continuous forward current	T_C=25°C	87	A
I_D	Continuous drain current @VGS=10V	T_C=25°C	87	A
		T_C=100°C	62	A
I_{DM}	Pulse drain current tested ①	T_C=25°C	376	A
I_{DSM}	Continuous drain current @VGS=10V	T_A=25°C	10	A
		T_A=70°C	8	A
EAS	Avalanche energy, single pulsed ②		41	mJ
P_D	Maximum power dissipation	T_C=25°C	100	W
P_{DSM}	Maximum power dissipation ③	T_A=25°C	1.25	W
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.5	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	°C/W

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_j=125℃)	V_{DS}=100V,V_{GS}=0V	--	--	100	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	1.1	--	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance ④	V_{GS}=10V, I_D=20A	--	5.5	6.5	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance ④	V_{GS}=4.5V, I_D=15A	--	7.0	9.0	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V, f=1MHz	--	3129	--	pF
C_{oss}	Output Capacitance		--	774	--	pF
C_{rss}	Reverse Transfer Capacitance		--	85	--	pF
R_g	Gate Resistance	f=1MHz	--	1	--	Ω
Q_g	Total Gate Charge	V_{DS}=50V,I_D=20A, V_{GS}=10V	--	46	--	nC
Q_{gs}	Gate-Source Charge		--	6.5	--	nC
Q_{gd}	Gate-Drain Charge		--	9	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V, I_D=20A, R_G=3Ω, V_{GS}=10V	--	11.7	--	ns
t_r	Turn-on Rise Time		--	7.2	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	34.5	--	ns
t_f	Turn-Off Fall Time		--	12.3	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=20A,V_{GS}=0V	--	0.8	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=20A, V_{GS}=0V di/dt=500A/μs	--	21.6	--	ns
Q_{rr}	Reverse Recovery Charge		--	44.7	--	nC

NOTE:

① Repetitive rating; pulse width limited by max junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH,R_G = 25Ω, I_{AS} = 10A, V_{GS} =10V. Part not recommended for use above this value

③ The power dissipation P_{DSM} is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C.

④ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

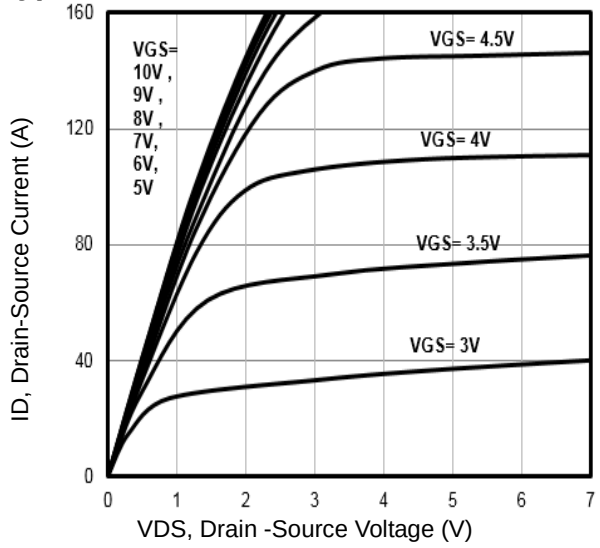


Fig1. Typical Output Characteristics

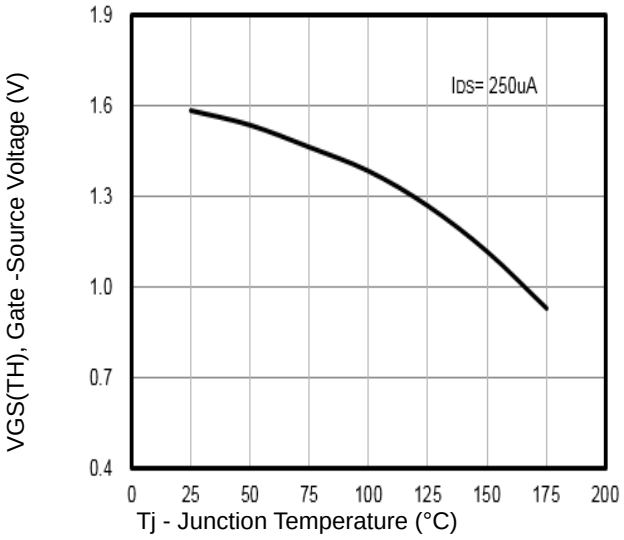


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

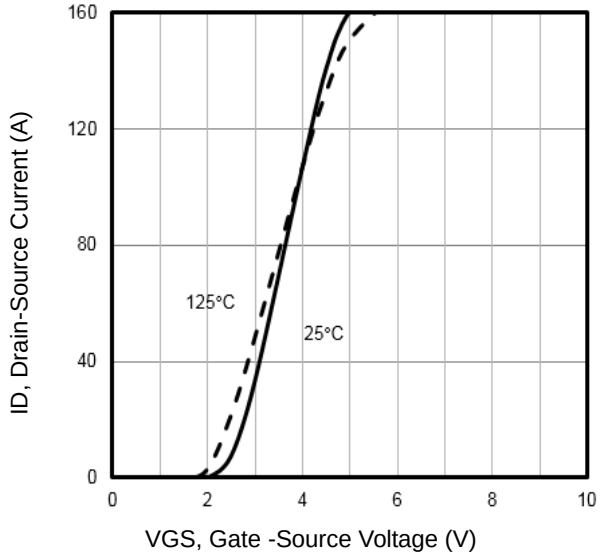


Fig3. Typical Transfer Characteristics

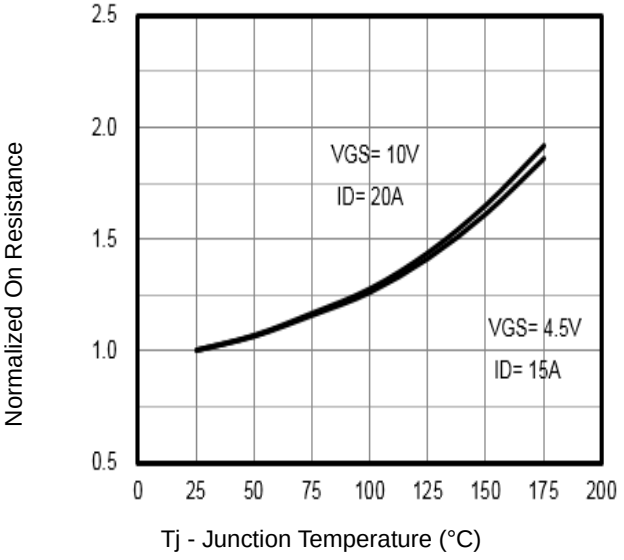


Fig4. Normalized On-Resistance Vs. Tj

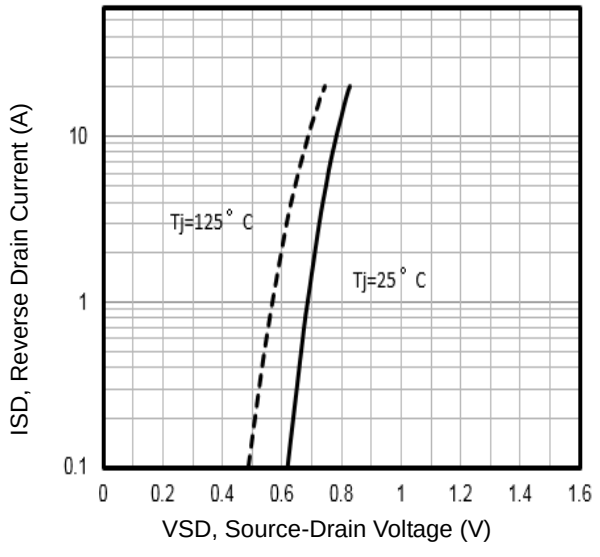


Fig5. Typical Source-Drain Diode Forward Voltage

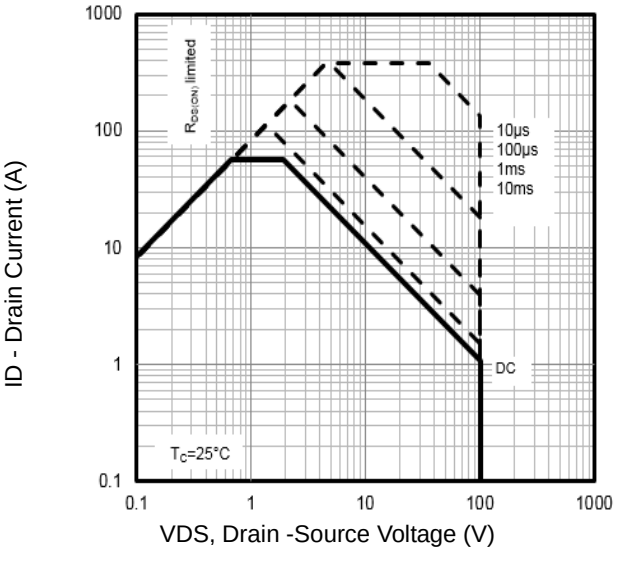


Fig6. Maximum Safe Operating Area

Typical Characteristics

Qg -Total Gate Charge (nC)

Fig7. Typical Capacitance Vs.Drain-Source Voltage

Fig8. Typical Gate Charge Vs.Gate-Source Voltage

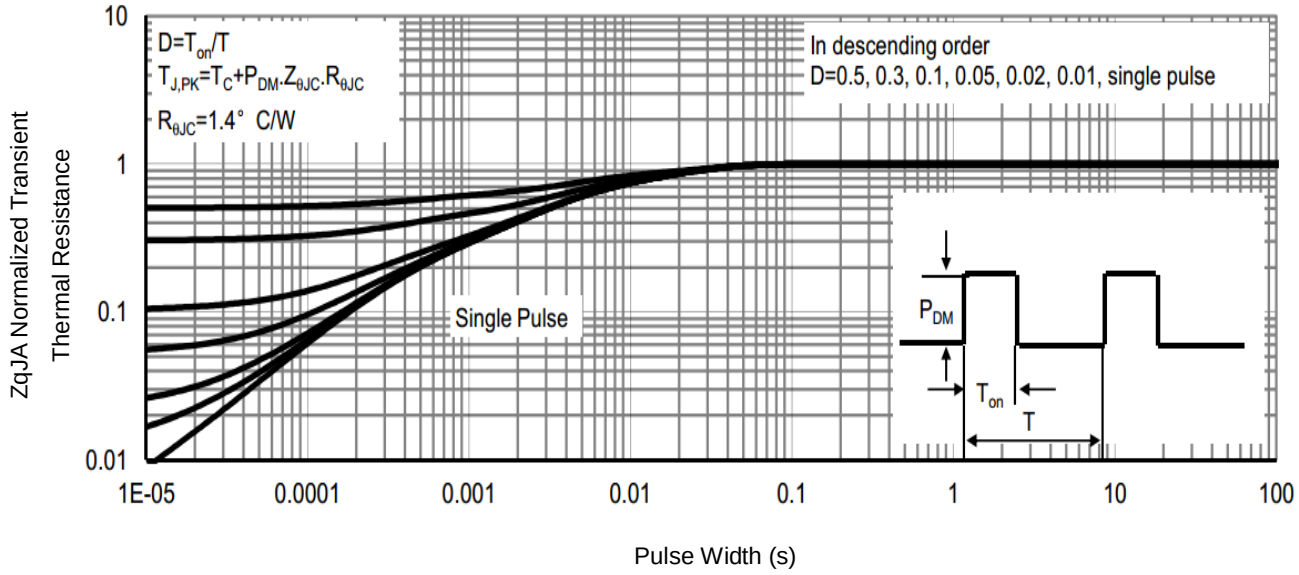


Fig9. Normalized Maximum Transient Thermal Impedance

Figure A ÖGate Charge Test Circuit and Waveform

Figure B ÖResistive Switching Test Circuit and Waveform

Figure C ÖUnclamped Inductive Switching Test Circuit and Waveform

TO-220

DIM	MILLIMETERS
A	f
A1	f
A2	f
A3	f
B	f
B1	f
C	f
C1	f
D	f
E	f
F	f
G	f
H	f
K	f
L	f
M	f
N	f
P	f
Q	f
T	:
DIA	4 G H H S

Unit :mm