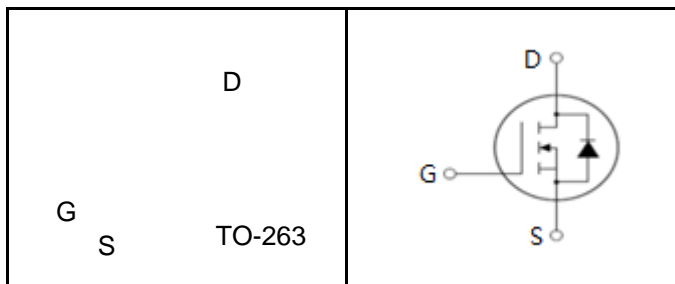




## FEATURES

- z  $BV_{DSS}=150V, I_D=157A$
- z  $R_{DS(on)}:6.3m\Omega(Max) @ V_{GS}=10V$
- Very low FOM  $R_{DS(on)} \times Q_g$
- 100% avalanche tested
- RoHS compliant



## APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- High-Frequency Switching and Synchronous Rectification



Device Marking and Package Information		
Device	Package	Marking
MPGC15R063	TO-263	MPGC15R063

### Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage ( $V_{GS}=0V$ )	150	V
$V_{GS}$	Gate-Source Voltage ( $V_{DS}=0V$ )	$\pm 20$	V
$I_D$	Drain Current-Continuous( $T_C=25^\circ C$ )	157	A
	Drain Current-Continuous( $T_C=100^\circ C$ )	111	A
$I_{DM (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	628	A
$P_D$	Maximum Power Dissipation( $T_C=25^\circ C$ )	326	W
	Maximum Power Dissipation( $T_C=100^\circ C$ )	163	W
$E_{AS}$	Avalanche energy (Note 2)	1500	mJ
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 175	

### Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		0.46	/W

## Electrical Characteristics (T<sub>J</sub>=25 unless otherwise noted)

Symbol	Parameter	Condition s	Min	Typ	Max	Unit
On/Off States						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> \$	150	167		V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =140V, V <sub>GS</sub> =0V			1	\$
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±2.0V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> \$	2		4	V
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =15A		33		S
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =40A		5.3	6.3	P
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		4200		pF
C <sub>oss</sub>	Output Capacitance			2867		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			215		pF
Switching Parameter s						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =75V, R <sub>L</sub> =1.07 , R <sub>GEN</sub> =3		18		nS
t <sub>r</sub>	Turn-on Rise Time			22		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			35		nS
t <sub>f</sub>	Turn-Off Fall Time			10		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =75V, I <sub>D</sub> =70A		65		nC
Q <sub>gs</sub>	Gate-Source Charge			20		nC
Q <sub>gd</sub>	Gate-Drain Charge			19		nC
Source -Drain Diode Characteristics						
I <sub>SD</sub>	Source-Drain Current (Body Diode)				161	A
V <sub>SD</sub>	Forward on Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =20A, dI/dt=500A/ μs		101		ns
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>F</sub> =20A, dI/dt=500A/ μs		1,240		nC

### Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L=0.5mH, V<sub>DD</sub> = 50V, R<sub>G</sub> = 25Ω, Starting T<sub>J</sub> = 25°C

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics	Figure 2. Transfer Characteristics

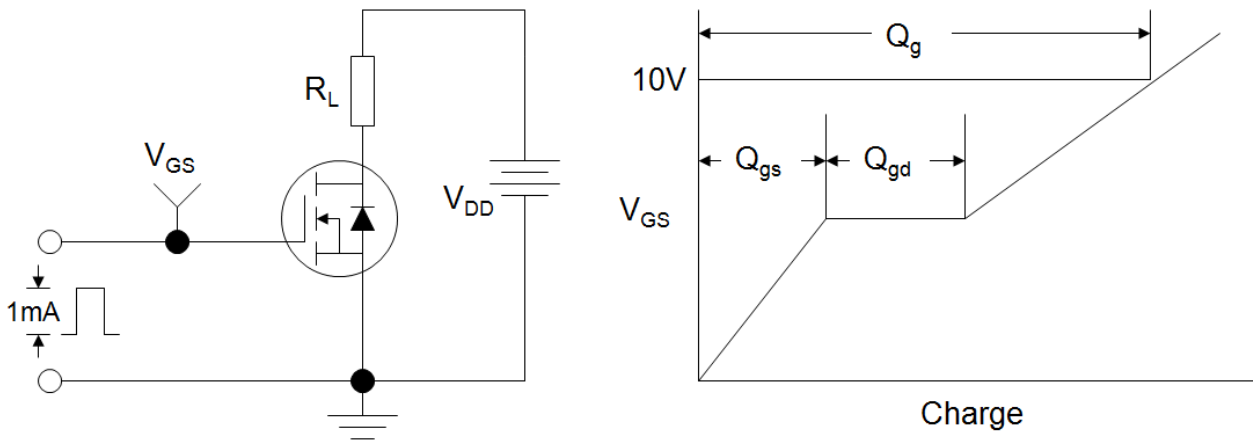
Figure 3. Power Dissipation	Figure 4. Drain Current

Figure 5. $BV_{DSS}$ vs Junction Temperature	Figure 6. $R_{DS(ON)}$ vs Junction Temperature

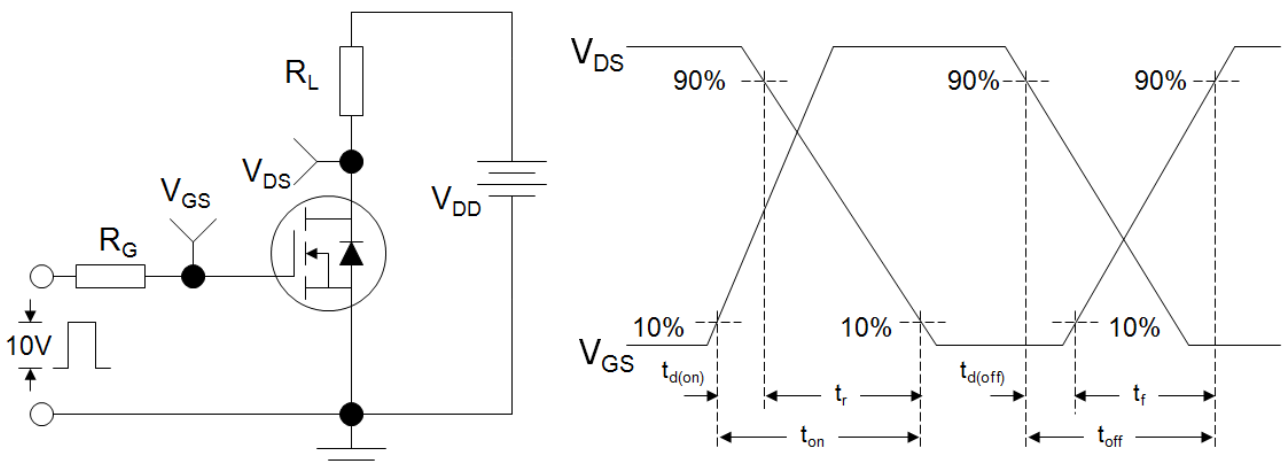
Figure 7. Gate Charge Waveforms	Figure 8. Capacitance

Figure 9. Body -Diode Characteristics	Figure 10. Maximum Safe Operating Area

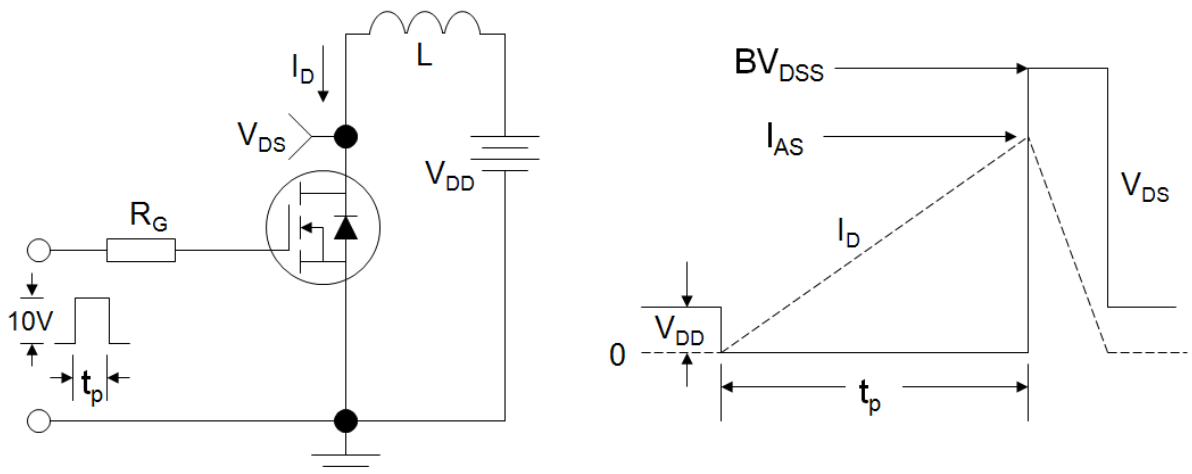
**Figure A: Gate Charge Test Circuit and Waveform**



**Figure B: Resistive Switching Test Circuit and Waveform**



**Figure C: Unclamped Inductive Switching Test Circuit and Waveform**



# MPGC15R063

## Package Dimension

unit: mm

Unit:mm				Unit:mm			
Symbol	Min.	Nom	Max.	Symbol	Min.	Nom	Max.
A	4.37	4.57	4.77	E	9.86	10.16	10.36
A1	1.22	1.27	1.42	E5	7.06	-	-
A2	2.49	2.69	2.89	e	2.54BSC		
A3	0.00	0.13	0.25	H	14.70	15.10	15.50
b	0.70	0.81	0.96	H2	1.07	1.27	1.47
b1	1.17	1.27	1.47	L	2.00	2.30	2.60
c	0.30	0.38	0.53	L1	1.40	1.55	1.70
D1	8.50	8.70	8.90	L4	0.25BSC		
D4	6.60	-	-		0°	5°	9°

### PIN Connections

1. Gate
2. Drain
3. Source