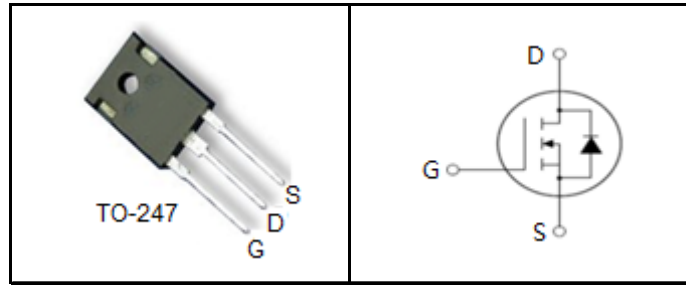


FEATURES

- $BV_{DSS}=200V$, $I_D=80A$
- $R_{DS(on)}:17m\Omega$ (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
MPGW20R170	TO-247	MPGW20R170

Absolute Maximum Ratings $T_C = 25^\circ C$, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS} = 0V$)	V_{DSS}	200	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current (note1)	I_{DM}	320	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulse Avalanche Energy (note2)	E_{AS}	1200	mJ
Power Dissipation ($T_C = 25^\circ C$)	P_D	300	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+175	$^\circ C$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case Max	R_{thJC}	0.5	K/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62	



芯集微科技

MPGW20R170

Specifications $T_J = 25^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	200	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 200V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
		V _{DS} = 200V, V _{GS} = 0V, T _J = 125°C	--	--	100	
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.5	--	4.5	V
Drain-Source On-Resistance (Note3)	R _{DS(on)}	V _{GS} = 10V, I _D = 50A	--	12	17	mΩ
Gate Resistance	R _G	f = 1.0MHz, open drain	--	3.2	--	Ω
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 50V, f = 1.0MHz	--	4543	--	pF
Output Capacitance	C _{oss}		--	523	--	
Reverse Transfer Capacitance	C _{rss}		--	9	--	
Total Gate Charge	Q _g	V _{DD} = 100V, I _D = 40A, V _{GS} = 10V	--	57	--	nC
Gate-Source Charge	Q _{gs}		--	19	--	
Gate-Drain Charge	Q _{gd}		--	9	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} = 100V, I _D = 40A , V _{GS} = 10V, R _G = 2 Ω	--	15	--	ns
Turn-on Rise Time	t _r		--	26	--	
Turn-off Delay Time	t _{d(off)}		--	40	--	
Turn-off Fall Time	t _f		--	11	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C = 25°C	--	--	80	A
Pulsed Diode Forward Current	I _{SM}		--	--	320	
Body Diode Voltage	V _{SD}	T _J = 25°C, I _{SD} = 50A, V _{GS} = 0V	--	0.9	1.2	V
Reverse Recovery Time	t _{rr}	V _R = 100V, I _F = 40A, di _F /dt = 100A/μs	--	125	--	ns
Reverse Recovery Charge	Q _{rr}		--	0.55	--	μC
Peak Reverse Recovery Current	I _{rrm}		--	8	--	A

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L=5\text{mH}$, $V_{DD} = 50V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

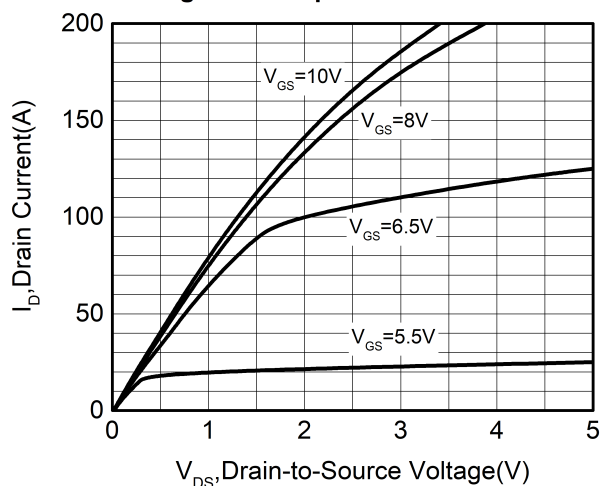


Figure 2. Transfer Characteristics

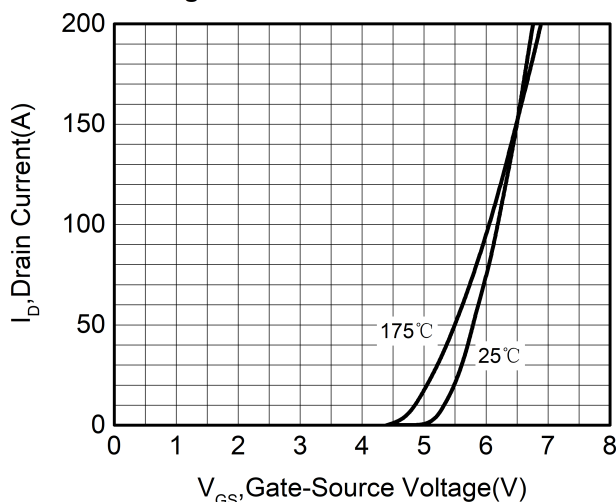


Figure 3. On-Resistance vs Drain Current

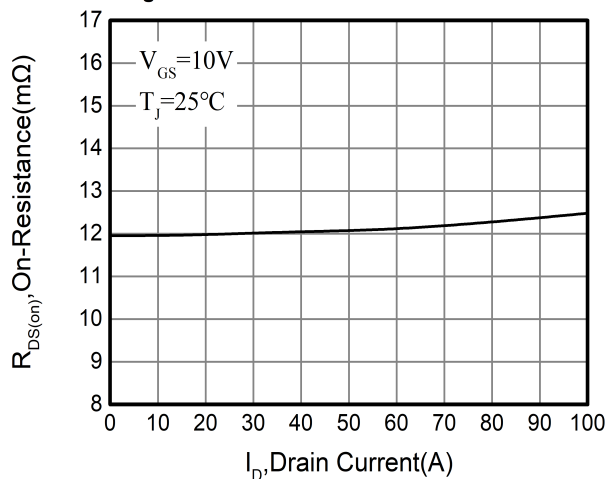


Figure 4. Capacitance

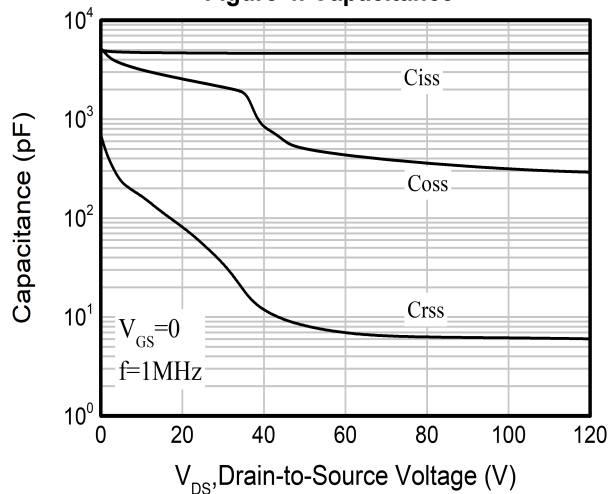


Figure 5. Gate Charge

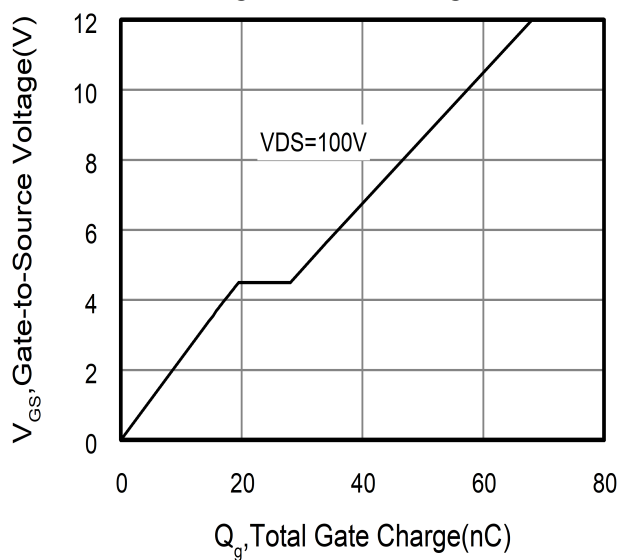
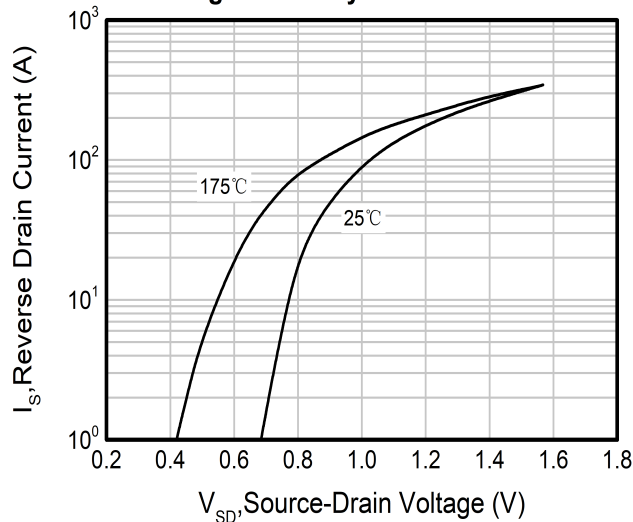


Figure 6. Body Diode Forward



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. On-Resistance vs Junction Temperature

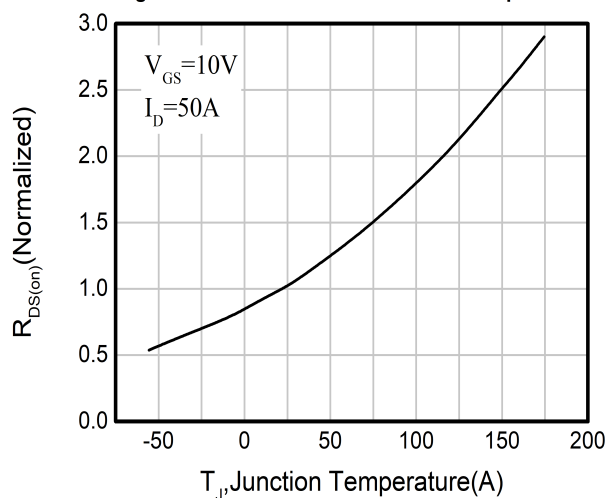


Figure 8. Threshold Voltage vs Junction Temperature

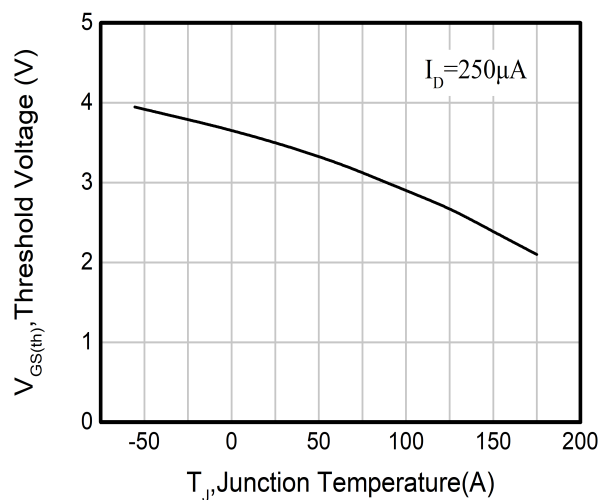


Figure 9. Transient thermal Impedance

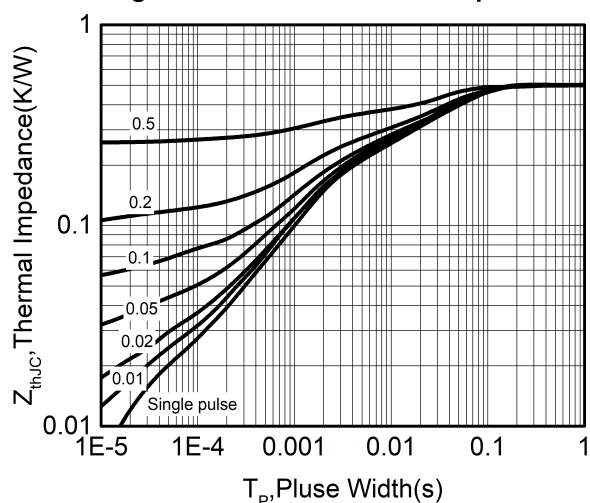


Figure 10. Safe Operating Area

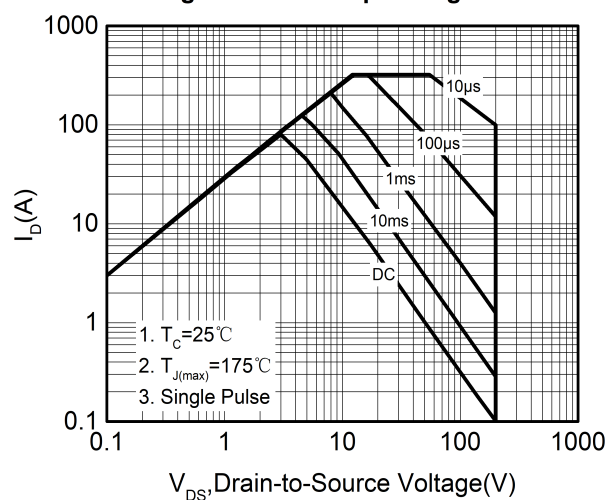


Figure A: Gate Charge Test Circuit and Waveform

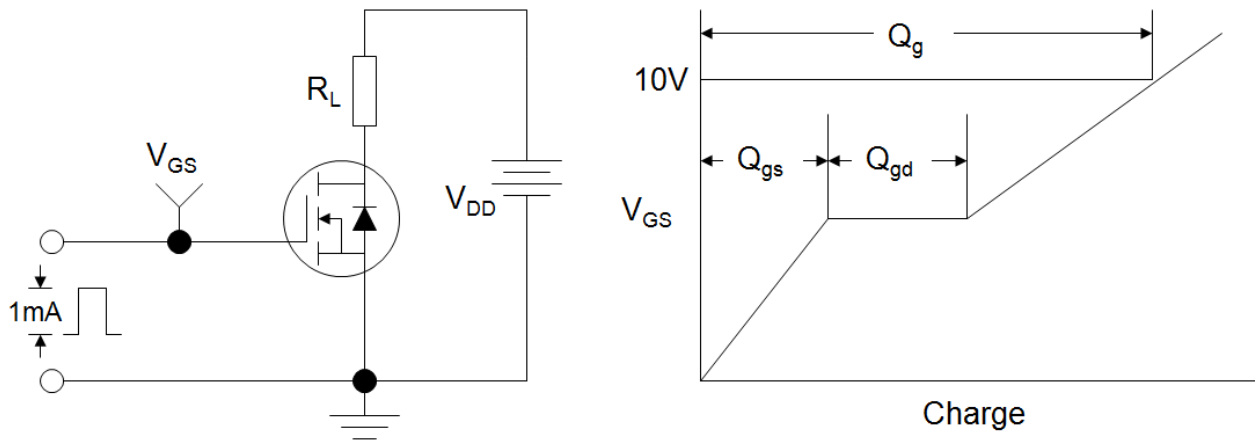


Figure B: Resistive Switching Test Circuit and Waveform

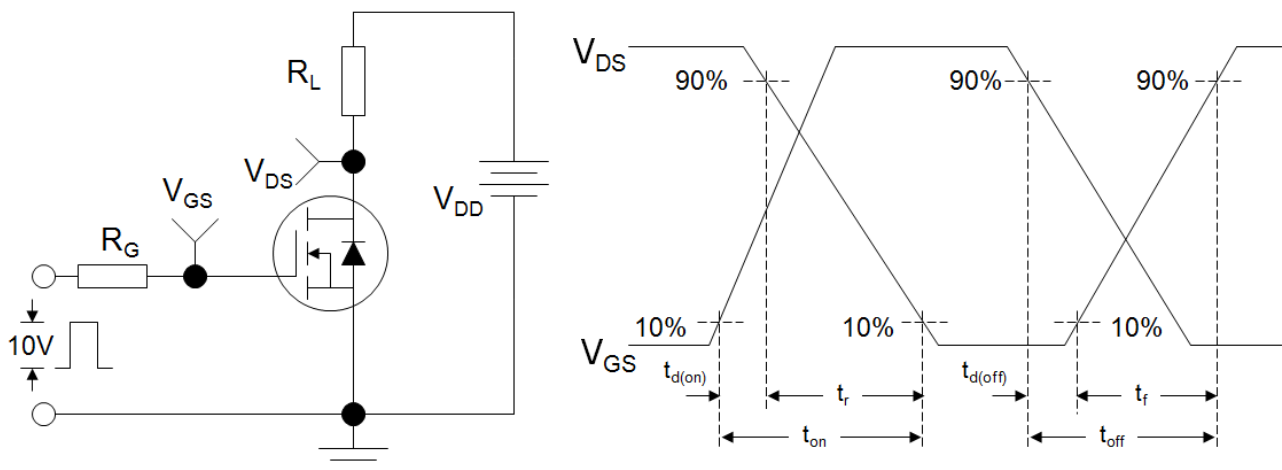
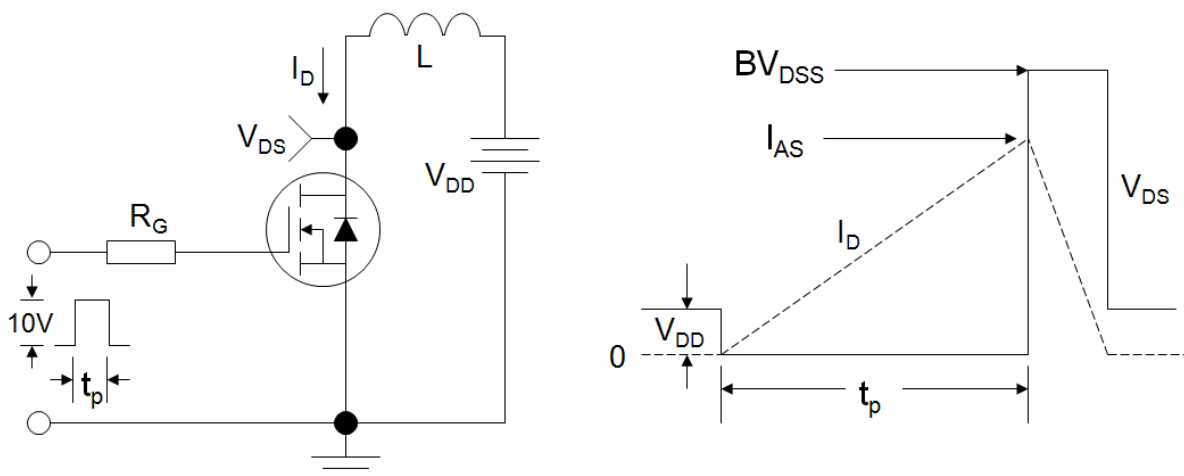
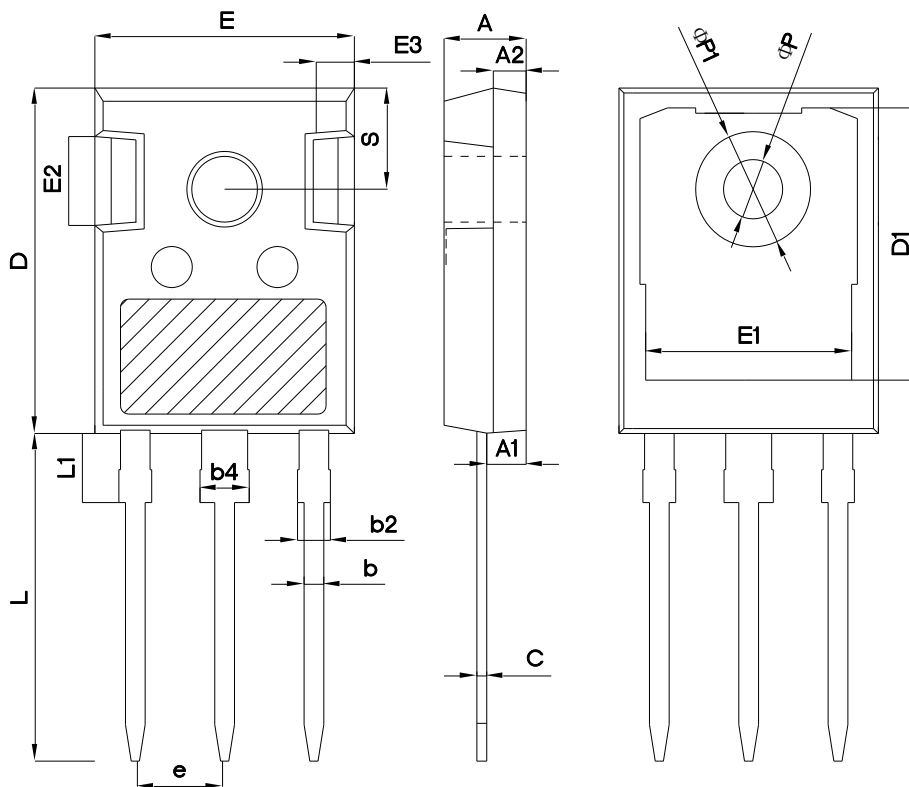


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



TO-247



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.80	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44BSC		
L	19.82	19.92	20.22
L1	-	-	4.30
ΦP	3.40	3.60	3.80
$\Phi P1$	-	-	7.30
S	6.15BSC		