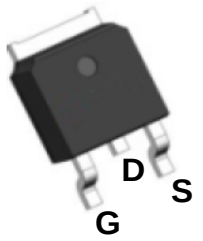
GPM380P10LTF

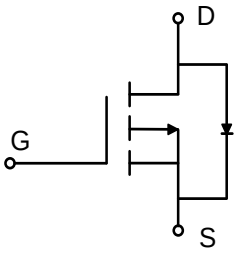
100V P-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-100V	38mΩ@10V	-35A
	42mΩ@4.5V	

TO-252-2L





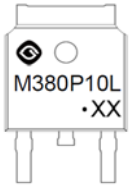
Feature

- Low Gate Charge
- Low RDS(on)
- 100% EAS Guaranteed

Application

- Power Management Switch
- DC/DC Converter

MARKING:



M380P10L = Device Code
XX = Date Code

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-100	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃	I_D	-35	A
	T_C = 100℃		-22	
Pulsed Drain Current[1]		I_{DM}	-140	A
Single Pulsed Avalanche Energy[2]		E_{AS}	156.8	mJ
Power Dissipation	T_C = 25℃	P_D	119	W
Thermal Resistance from Junction to Ambient[3]		$R_{\theta JA}$	55	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.05	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition		Min	Type	Max	Unit
Off Characteristics							
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA		-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -100V, V_{GS} = 0V	T_J= 25℃			1	μA
			T_J= 100℃			-100	
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V				±100	nA
On Characteristics							
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA		-1.2	-1.7	-2.4	V
Drain-Source On-Resistance[4]	$R_{DS(on)}$	V_{GS} = -10V, I_D = - 20A			38	50	mΩ
		V_{GS} = -4.5V, I_D = -10A			42	58	
Forward Transconductance[4]	gfs	V_{DS} = -10V, I_D = -20A			44		S
Dynamic Characteristics[5]							
Input Capacitance	C_{iss}	V_{DS} = -50V, V_{GS} = 0V, f = 1MHz			5000		pF
Output Capacitance	C_{oss}				151		
Reverse Transfer Capacitance	C_{rss}				130		
Gate Resistance	R_g	f = 1MHz			11		Ω
Switching Characteristics[5]							
Total Gate Charge	Q_g	V_{DS} = -50V, V_{GS} = -10V, I_D = -20A			115		nC
Gate-Source Charge	Q_{gs}				15		
Gate-Drain Charge	Q_{gd}				14		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -50V, V_{GS} = -10V, R_G = 3Ω I_D = -20A			14.2		ns
Turn-On Rise Time	t_r				38.9		
Turn-Off Delay Time	$t_{d(off)}$				65		
Turn-Off Fall Time	t_f				37.5		
Source - Drain Diode Characteristics							
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -20A				-1.2	V
Continuous Source Current	I_S	T_C= 25℃				-35	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{A(MAX)}$=150°C.
2. The test condition is V_{DD}= -30V, L=0.4mH, I_{AS}= -28A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

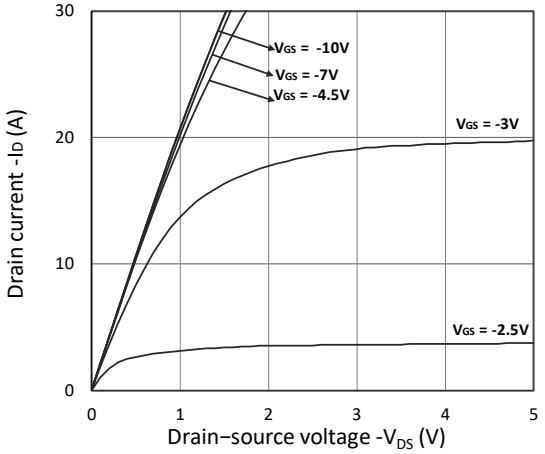


Figure 1. Output Characteristics

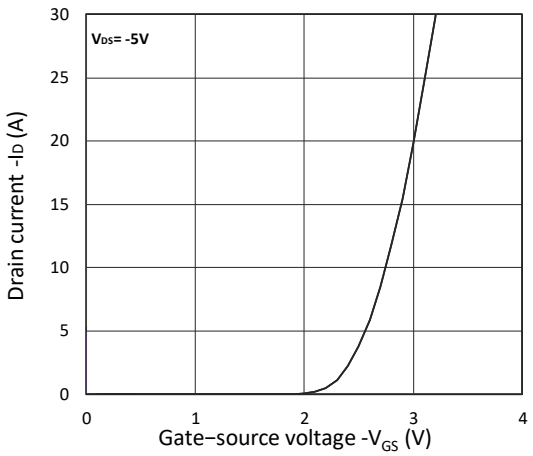


Figure 2. Transfer Characteristics

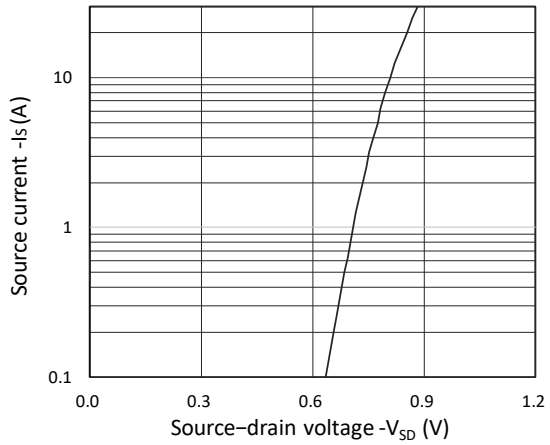


Figure 3. Forward Characteristics of Reverse

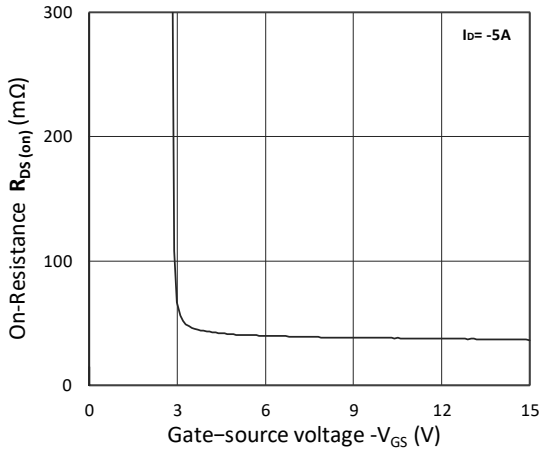


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

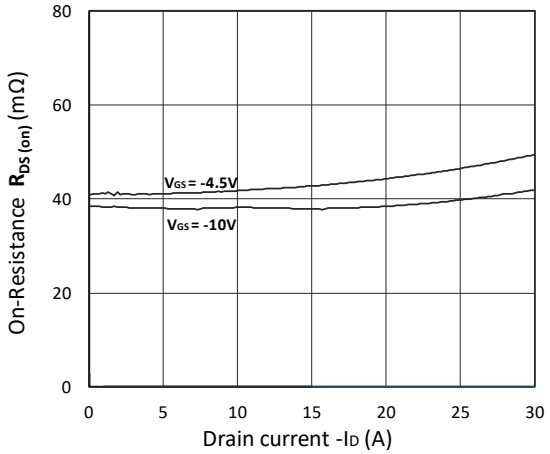


Figure 5. $R_{DS(ON)}$ vs. I_D

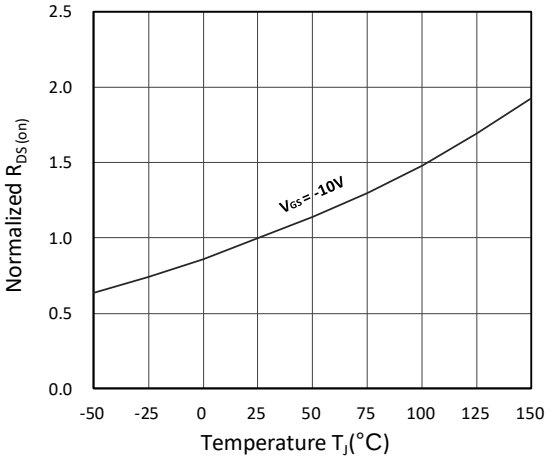


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

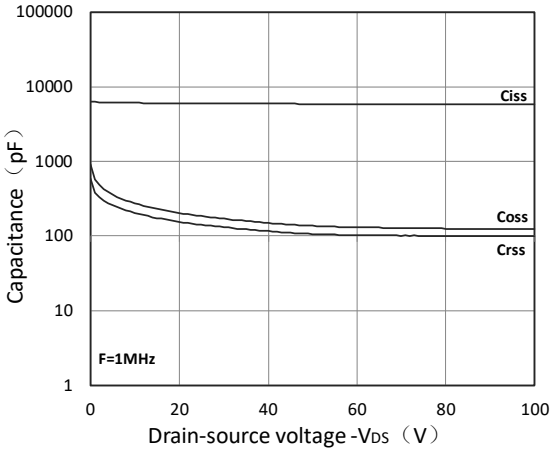


Figure 7. Capacitance Characteristics

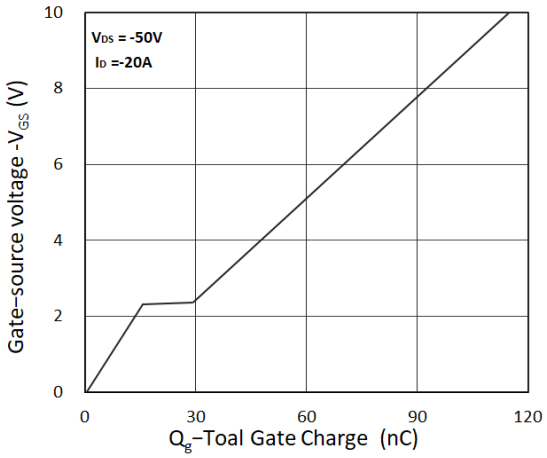


Figure 8. Gate Charge Characteristics

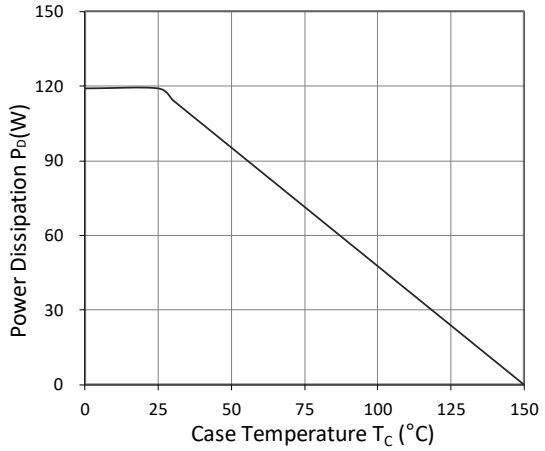


Figure 9. Power Dissipation

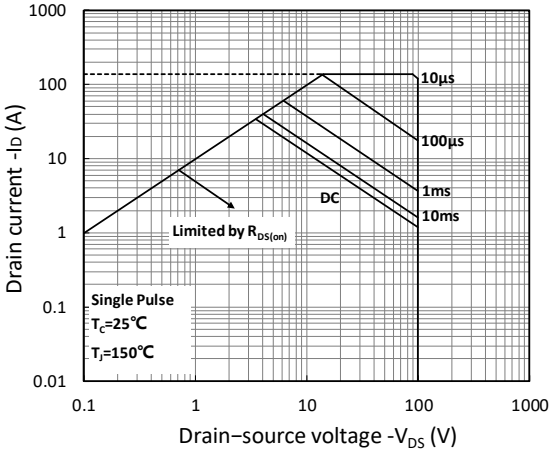


Figure10. Safe Operating Area

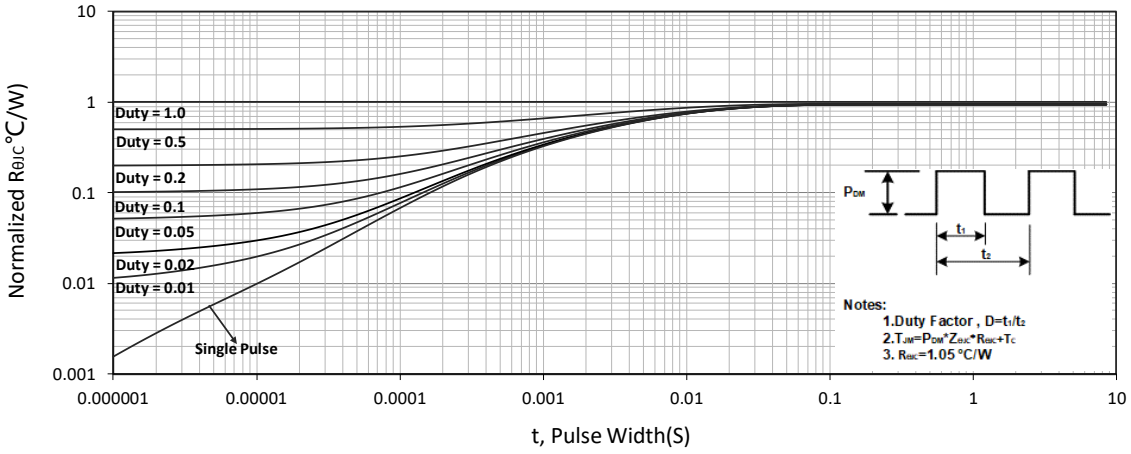
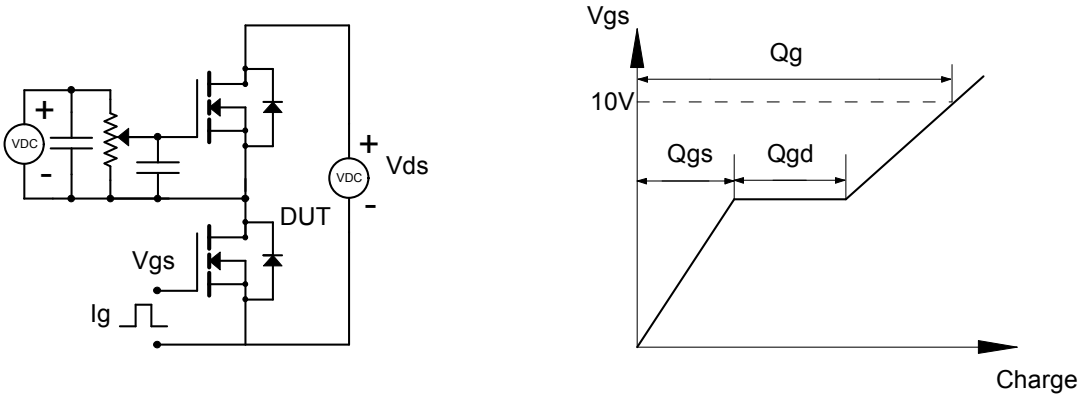


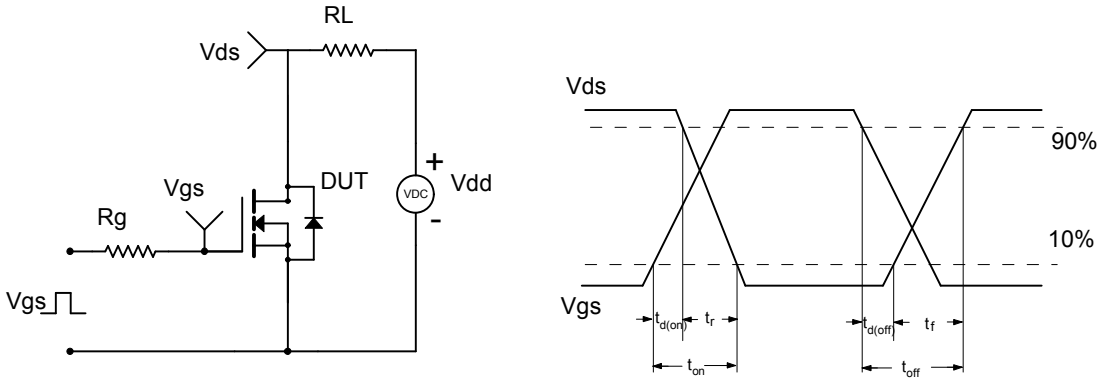
Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

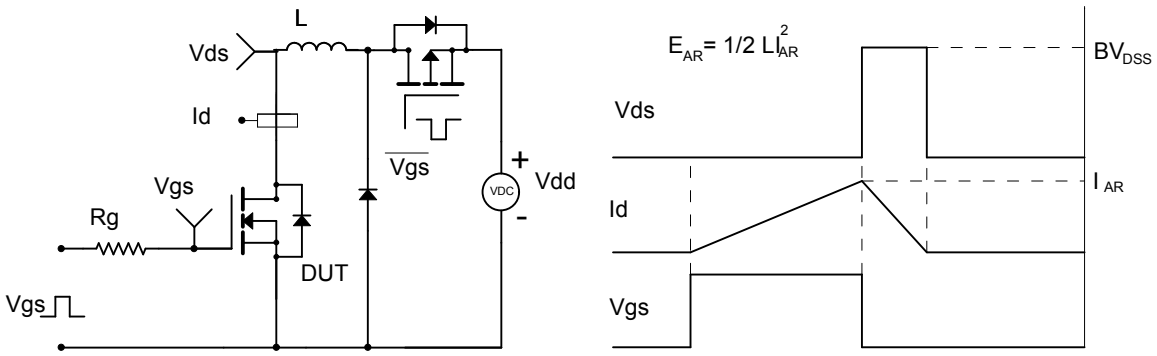
Gate Charge Test Circuit & Waveform



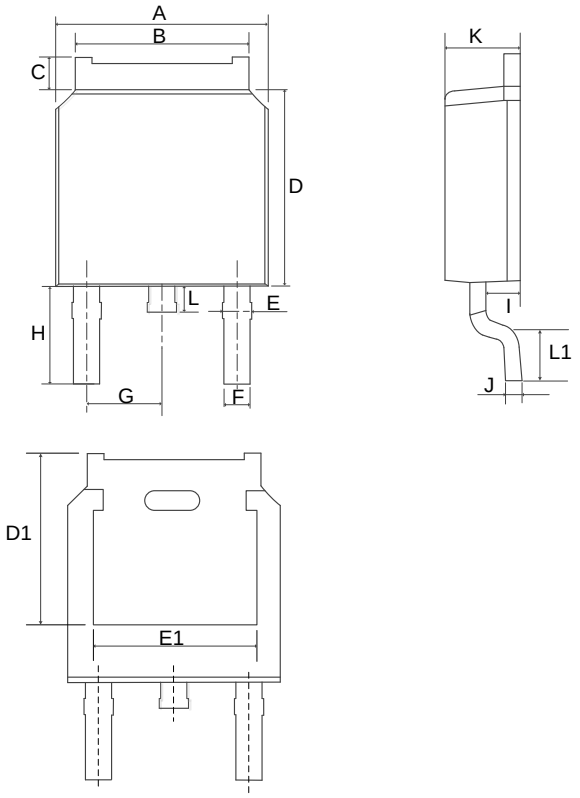
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO-252-2L Package Information



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	6.40	6.80
B	5.13	5.50
C	0.88	1.28
D	5.90	6.22
D1	5.35REF	
E	0.68	1.10
E1	4.83REF	
F	0.68	0.91
G	2.29REF	
H	2.90REF	
I	0.85	1.17
J	0.51REF	
K	2.10	2.50
L	0.40	1.00
L1	1.50REF	

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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