

Product Summary

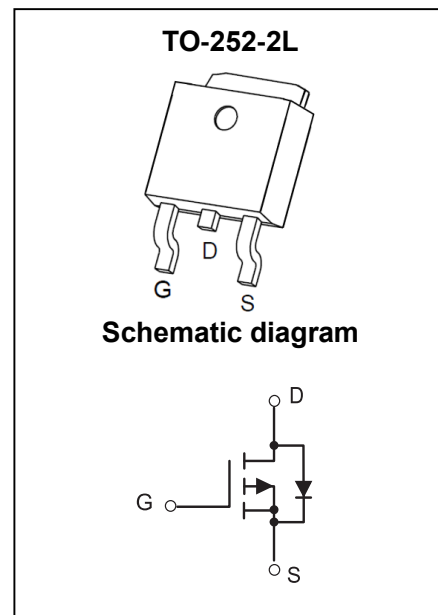
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	10mΩ@-10V	-50A
	15mΩ@-4.5V	

Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Switching Application
- DC/DC Converter



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPM110P04LTF	TO-252-2L	M110P04L	Reel & Tape	330mm	16mm	2500pcs

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	-50	A
	$T_C = 100^\circ\text{C}$	I_D	-31	A
Pulsed Drain Current ²		I_{DM}	-200	A
Single Pulsed Avalanche Current ³		I_{AS}	-30	A
Single Pulsed Avalanche Energy ³		E_{AS}	225	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	55	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	2.27	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

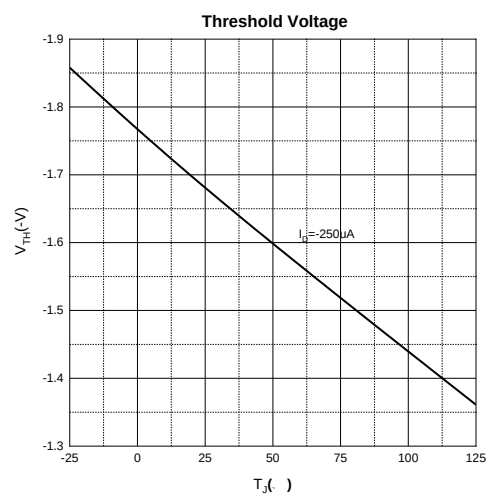
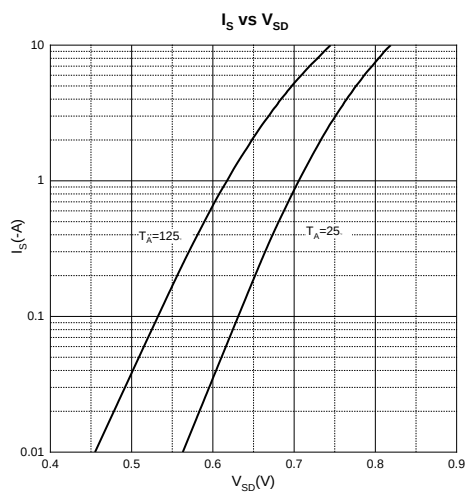
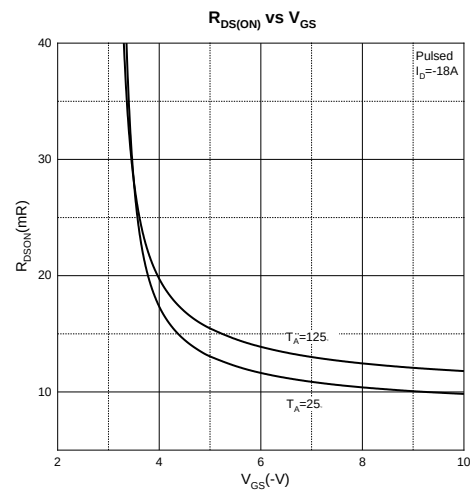
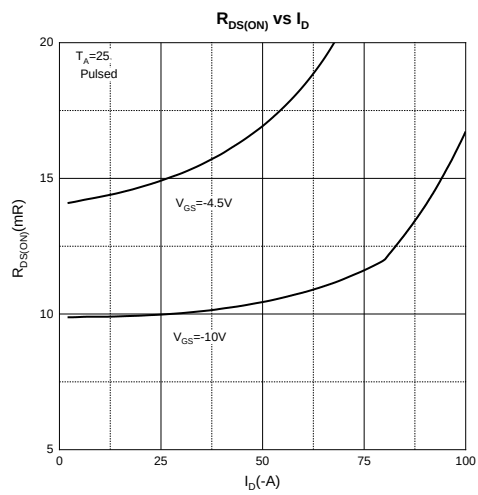
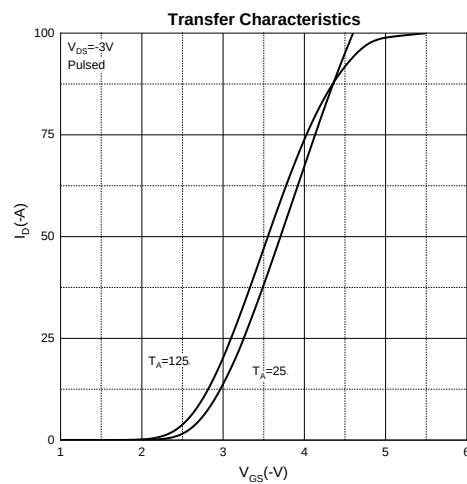
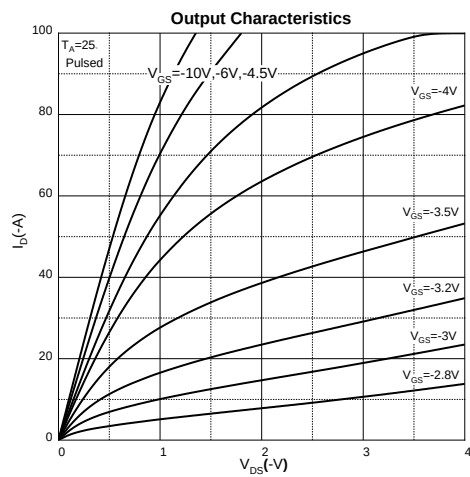
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

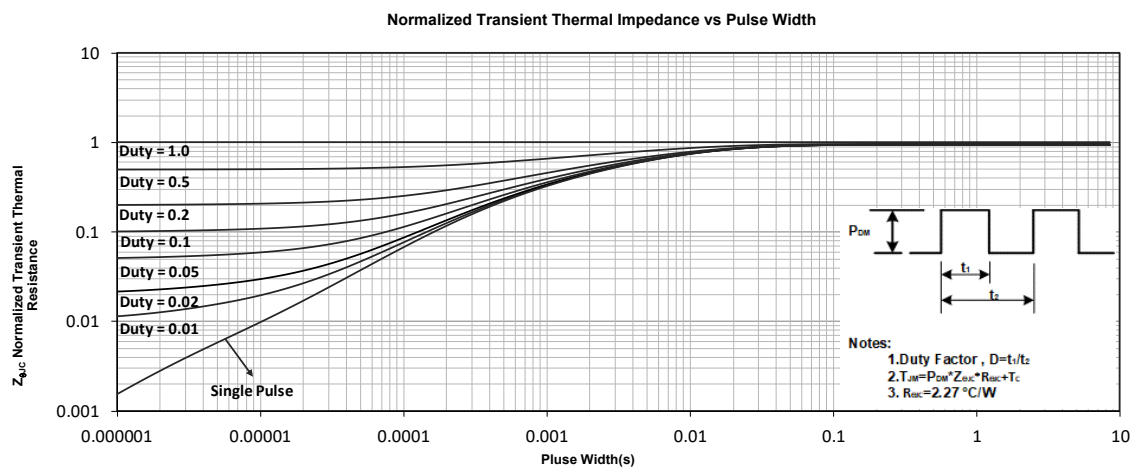
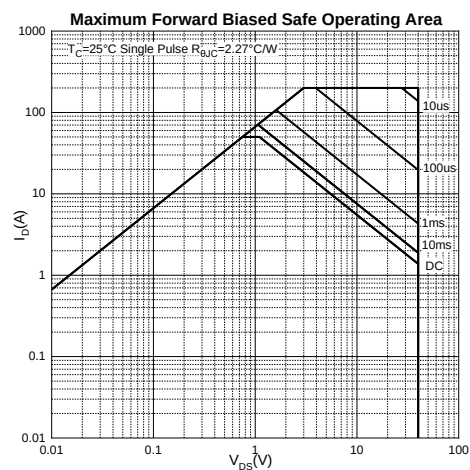
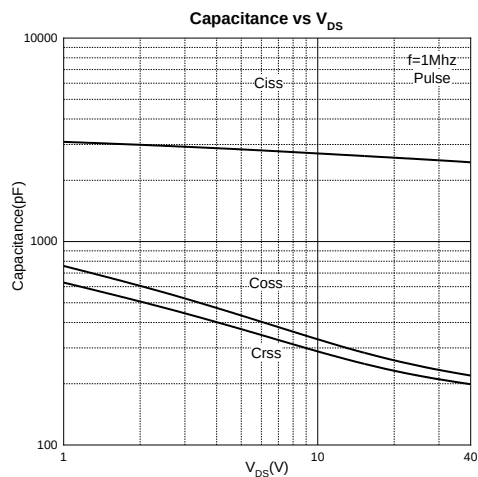
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.7	-3.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -18A		10	14	mΩ
		V _{GS} = -4.5V, I _D = -12A		15	19	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz		2609		pF
Output Capacitance	C _{oss}			261		
Reverse Transfer Capacitance	C _{rss}			231		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		8.7		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = -20V, V _{GS} = -10V, I _D = -12A		59		nC
Gate-Source Charge	Q _{gs}			8		
Gate-Drain Charge	Q _{gd}			13		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, I _D = -18A, R _G = 3Ω		33		ns
Turn-On Rise Time	t _r			28		
Turn-Off Delay Time	t _{d(off)}			85		
Turn-Off Fall Time	t _f			9		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = -10A			1.2	V

Notes :

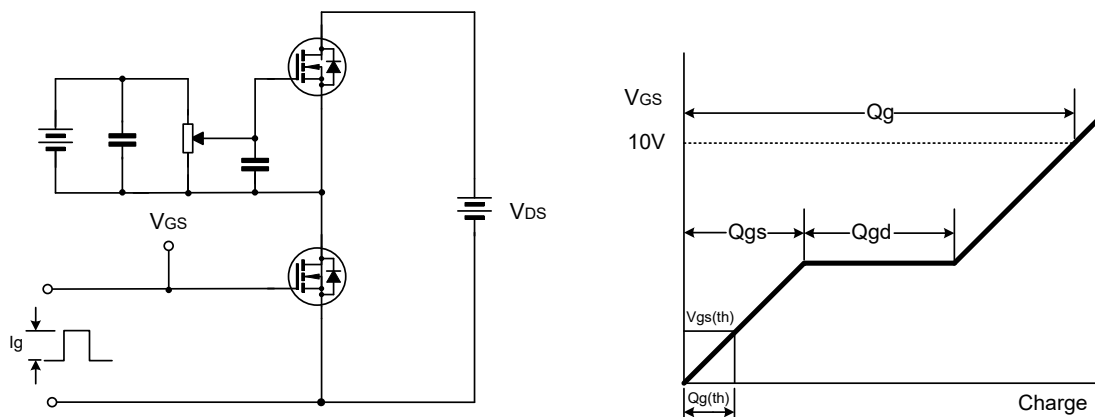
- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = -20V, V_{GS} = -10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.And device mounted on a large heatsink
- 6.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics

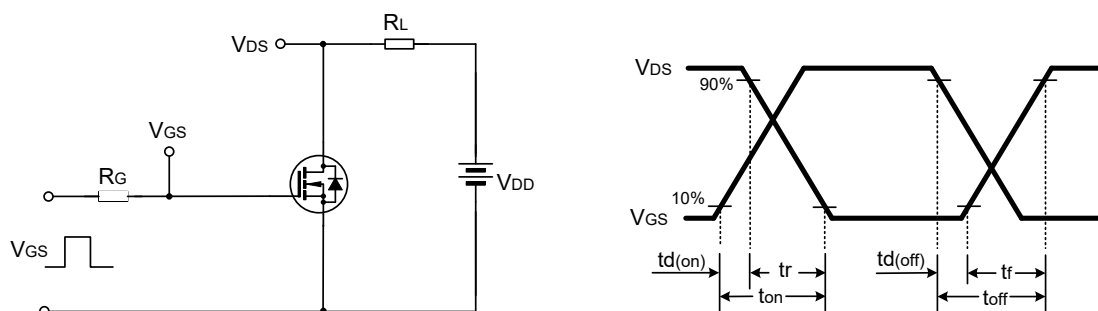




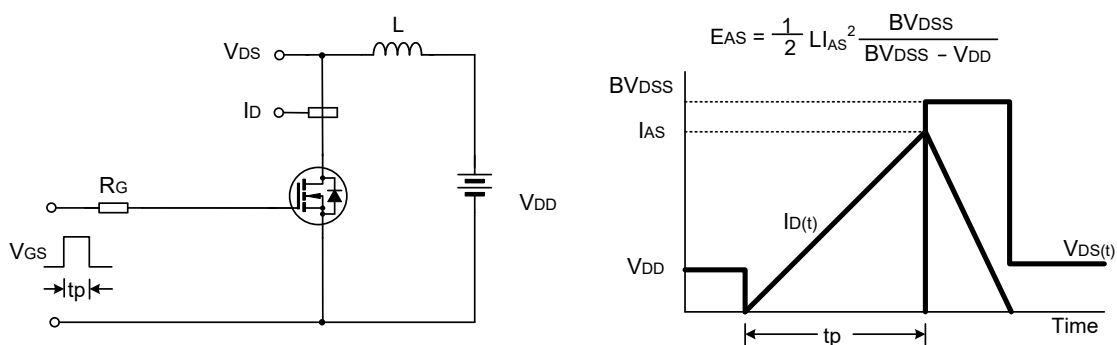
Gate Charge Test Circuit & Waveform

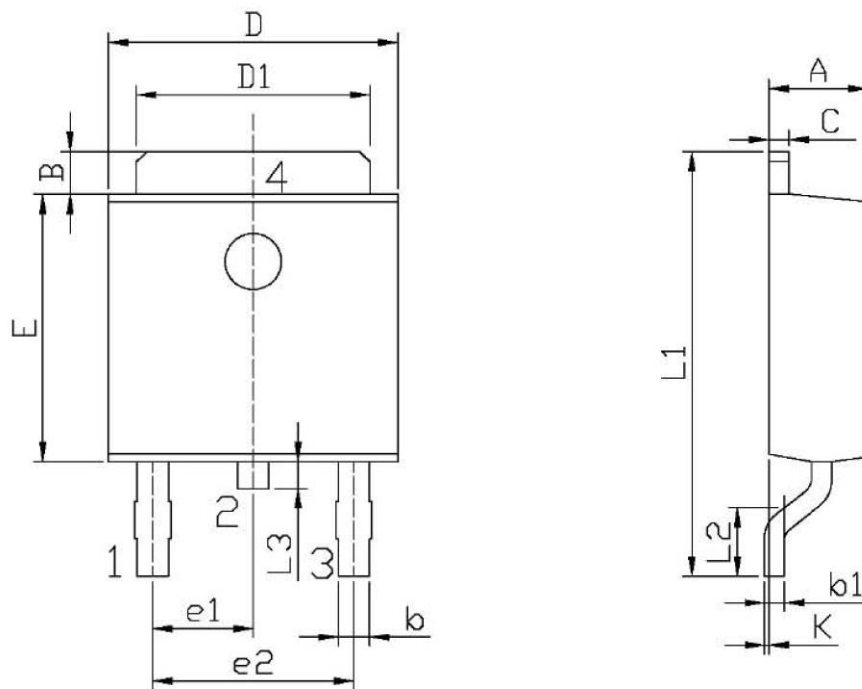


Resistive Switching Test Circuit & Waveform



E_{AS} Test Circuit & Waveform



TO-252-2L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
B	0.950	1.250	0.037	0.049
b	0.500	0.700	0.020	0.028
b1	0.450	0.550	0.018	0.022
C	0.450	0.550	0.018	0.022
D	6.450	6.750	0.254	0.266
D1	5.100	5.500	0.201	0.217
E	5.950	6.250	0.234	0.246
e1	2.240	2.340	0.088	0.092
e2	4.430	4.730	0.174	0.186
L1	9.450	9.950	0.372	0.392
L2	1.250	1.750	0.049	0.069
L3	0.600	0.900	0.024	0.035
K	0.000	0.100	0.000	0.004

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.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.