

Product Summary

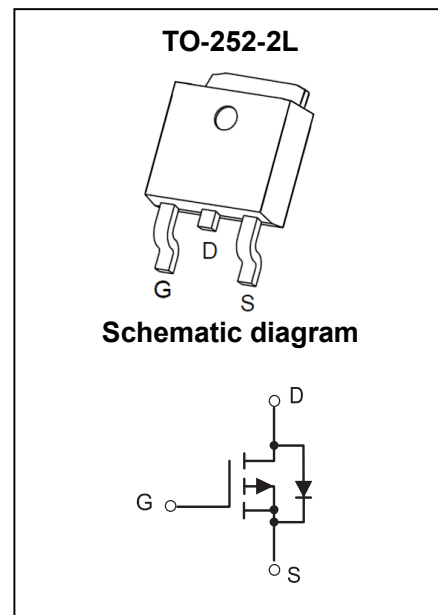
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	10mΩ@-10V	-50A
	15mΩ@-4.5V	

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	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	$^{\circ}\text{C}$

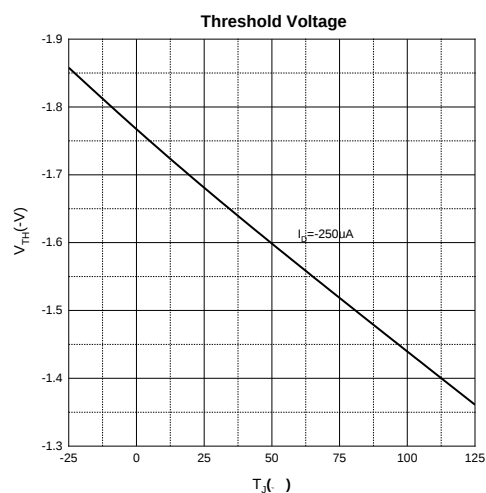
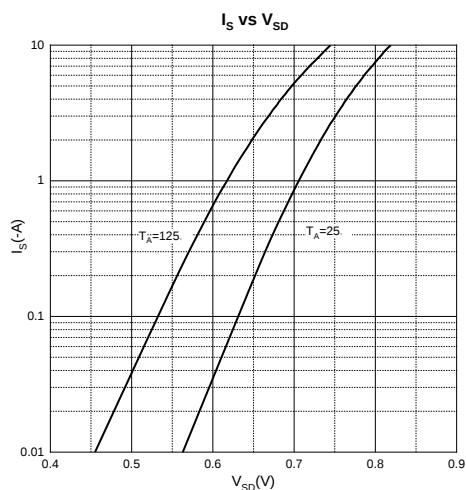
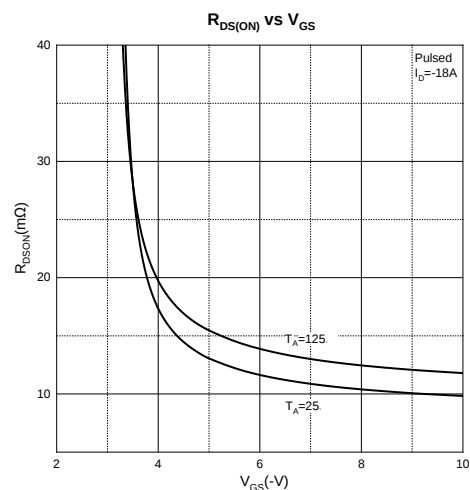
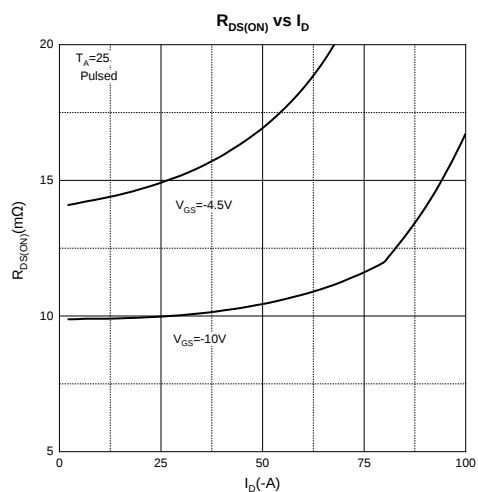
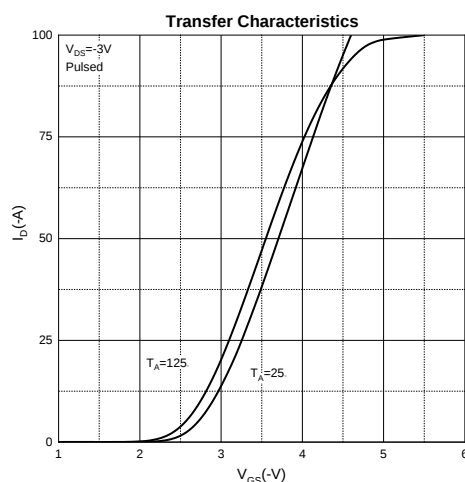
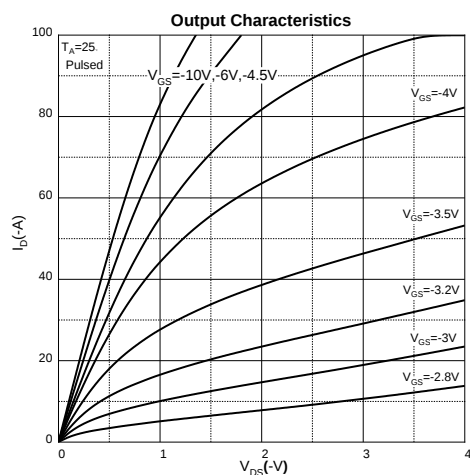
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

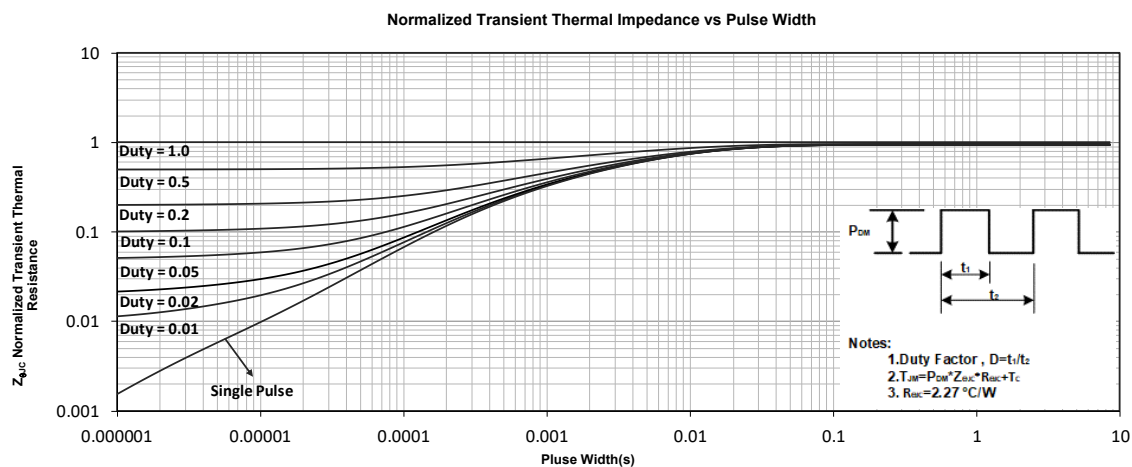
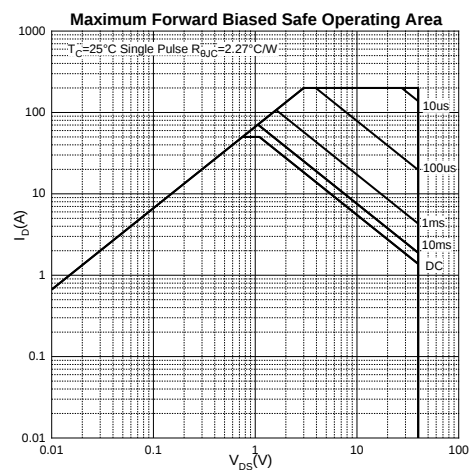
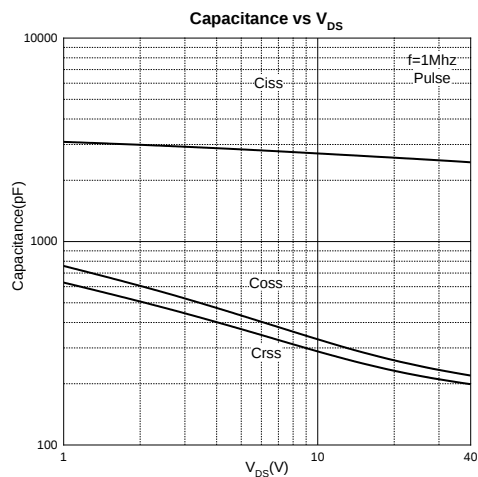
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -40V, V_{GS} = 0V$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics ⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.7	-3.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -18A$		10	14	m Ω
		$V_{GS} = -4.5V, I_D = -12A$		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	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V, I_D = -18A,$ $R_G = 3\Omega$		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 $T_A = 25^\circ\text{C}$.

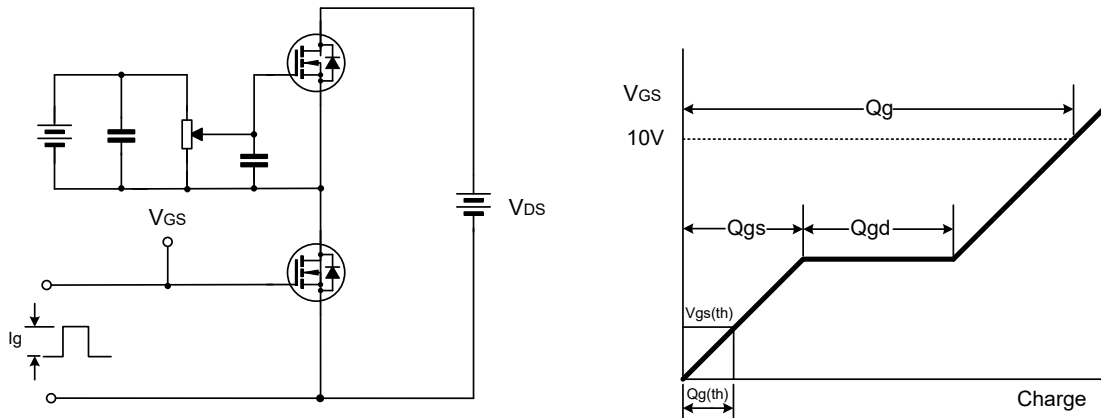
Typical Characteristics



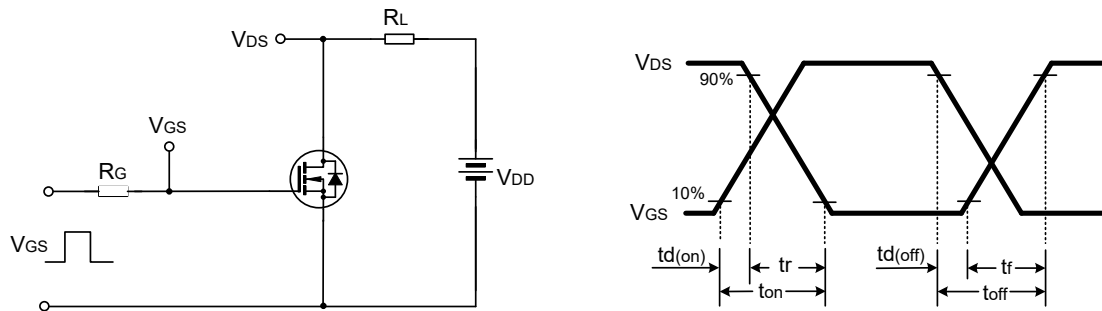


Test Circuit

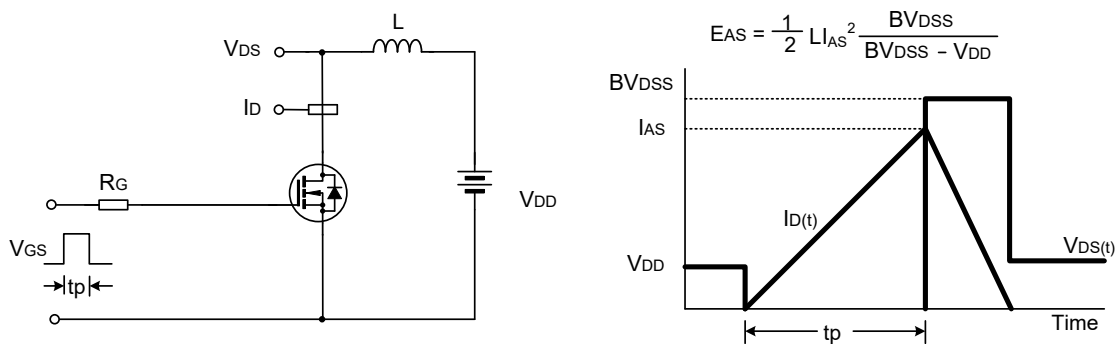
Gate Charge Test Circuit & Waveform

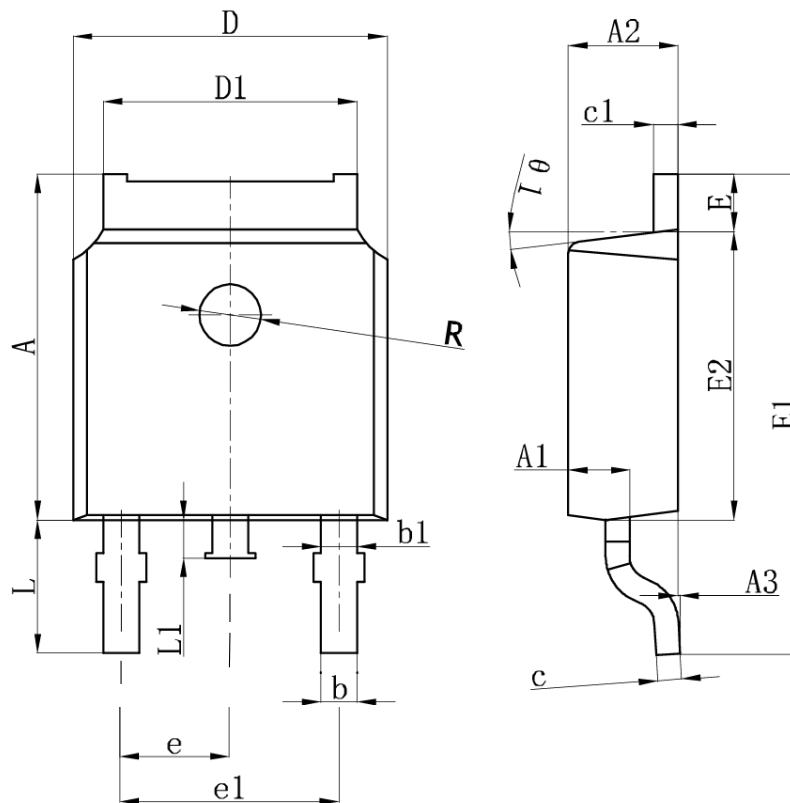


Resistive Switching Test Circuit & Waveform



E_{AS} Test Circuit & Waveform



TO-252-2L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.850	7.250	0.269	0.285
A1	0.960	1.060	0.038	0.042
A2	2.200	2.400	0.087	0.094
A3	0.000	0.15	0.000	0.006
b	0.760REF		0.030REF	
b1	1.000REF		0.039REF	
c	0.508REF		0.020REF	
c1	0.508REF		0.020REF	
D	6.250	6.850	0.246	0.270
D1	5.050	5.650	0.199	0.222
E	0.850	1.200	0.033	0.047
E1	9.700	10.400	0.382	0.409
E2	5.800	6.400	0.228	0.252
e	2.286BSC		0.090BSC	
e1	4.572REF		0.180REF	
L	2.650	2.950	0.104	0.116
L1	0.600	1.000	0.024	0.039
θ	7°REF		7°REF	
R	1.300REF		0.051REF	

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.