M210P06LTF

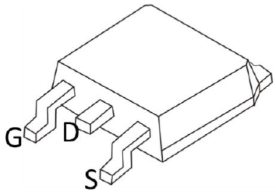
TO-252-2L Plastic-Encapsulate MOSFET

60V P-Channel MOSFET

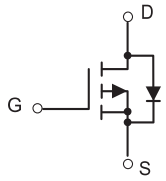
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	20mΩ@-10V	-50A
	26mΩ@-4.5V	

TO-252-2L



Schematic diagram



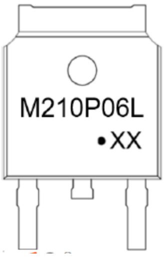
Feature

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

Application

- Power Switching Application

MARKING:



M210P06L = Device Code

XX = Date Code

Solid Dot = Green Indicater

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

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-60	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	-50	A
	T_C = 100℃		32	
Pulsed Drain Current[2]		I_{DM}	-200	A
Single Pulsed Avalanche Current[3]		I_{AS}	-19	A
Single Pulsed Avalanche Energy[3]		E_{AS}	98	mJ
Power Dissipation[5]	T_C = 25℃	P_D	78	W
Thermal Resistance from Junction to Ambient[6]		$R_{θJA}$	52	℃/W
Thermal Resistance from Junction to Case		$R_{θJC}$	1.6	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

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	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -60V, 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	-1.5	-3.0	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -3A		20	41	mΩ
		V_{GS} = -4.5V, I_D = -3A		26	51	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -30V, V_{GS} = 0V, f = 1MHz		2775		pF
Output Capacitance	C_{oss}			169		
Reverse Transfer Capacitance	C_{rss}			142		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		9.2		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -6.5A		54		nC
Gate-source Charge	Q_{gs}			6.9		
Gate-drain Charge	Q_{gd}			11.3		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -20V, V_{GS} = -10V, R_L=1.5Ω, R_G = 3Ω		7		ns
Turn-on Rise Time	t_r			3		
Turn-off Delay Time	$t_{d(off)}$			32		
Turn-off Fall Time	t_f			6		
Source - Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -2A			-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 ≤ 10μs, duty cycle ≤ 1%.

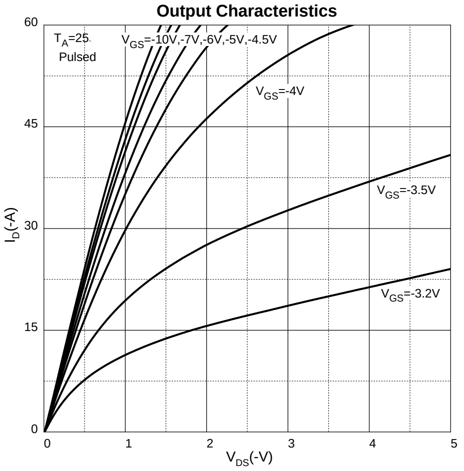
3.E_{AS} condition: V_{DD} = -30V,V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

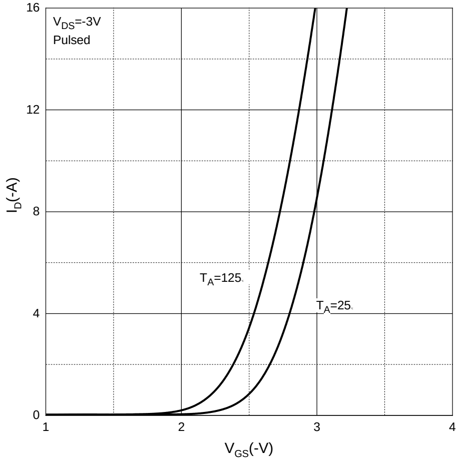
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

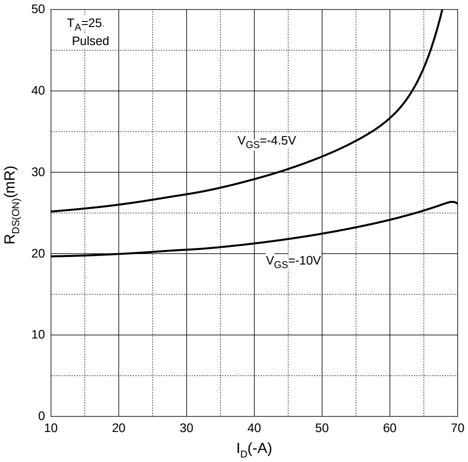
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

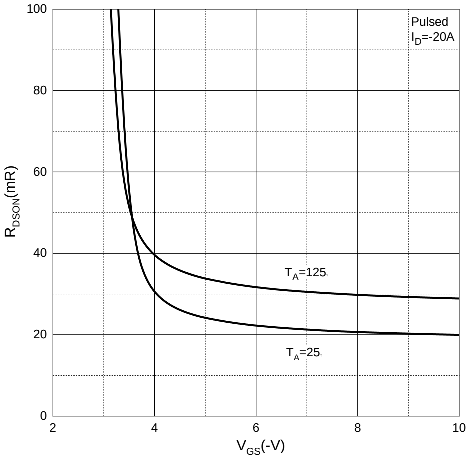
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

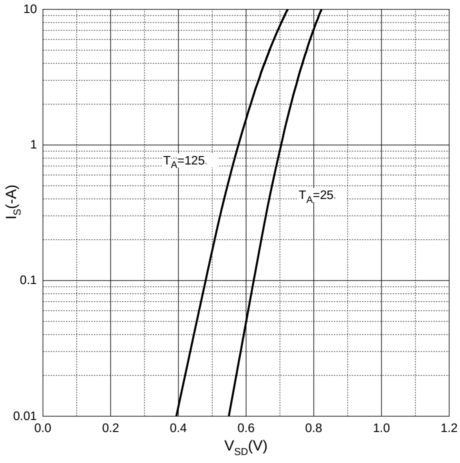
Typical Characteristics

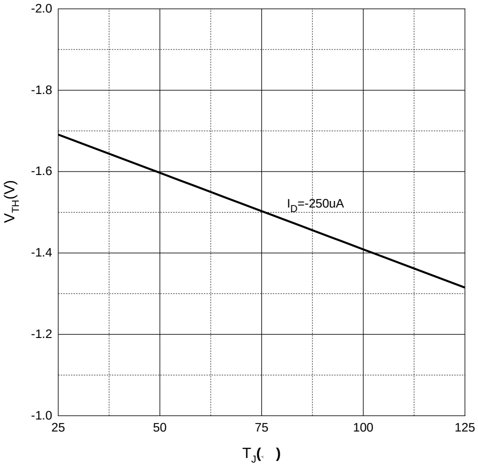

Output Characteristics


Transfer Characteristics

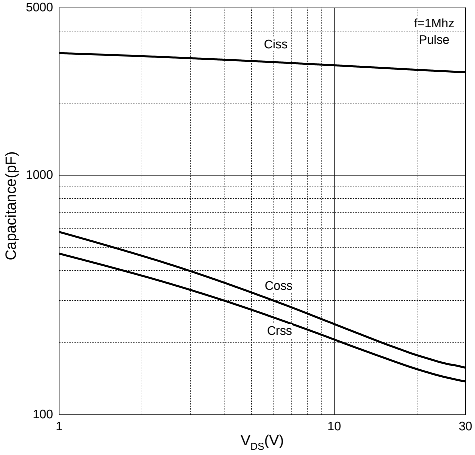

$R_{DS(ON)}$ vs I_D

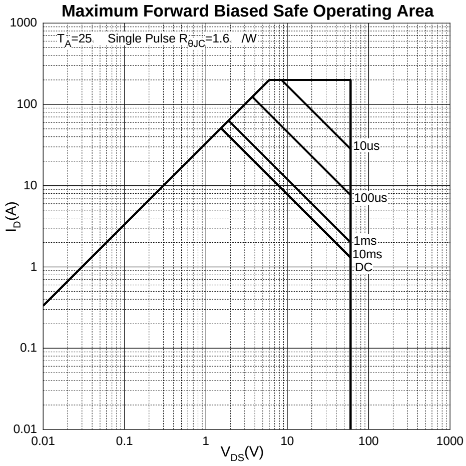

$R_{DS(ON)}$ vs V_{GS}

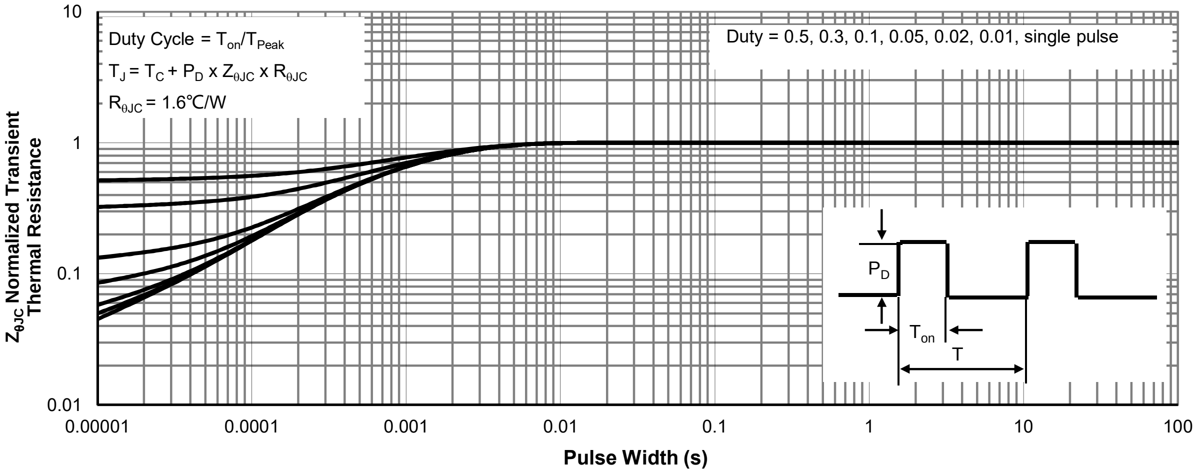

I_S vs V_{SD}


Threshold Voltage

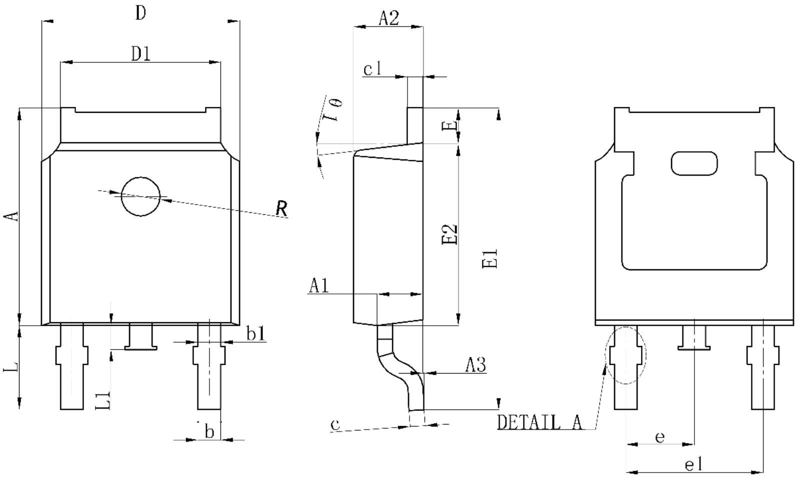
Typical Characteristics

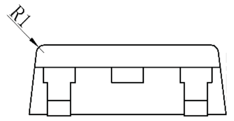

Capacitance vs V_{DS}

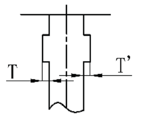

Maximum Forward Biased Safe Operating Area


Normalized Transient Thermal Impedance vs Pulse Width

TO-252-2L Package Outline Dimensions







0<=T, T'<=0.12

DETAIL A

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	0.127	0.000	0.005
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	1.050	0.033	0.041
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	0.900	0.024	0.035
θ1	7°REF		7°REF	
R	1.300REF		0.051REF	
R1	0.250REF		0.010REF	