

SLP120N10G 100V N -Channel MOSFET

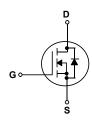
General Description

This Power MOSFET is produced using Msemitek's advanced Shielding Gate MOSFET technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for low voltage applications such as DC/DC converters and high efficiency switching for power management in portable and battery operated products.

Features

- N-Channel:100V 120A
 - $R_{DS(on)Typ}$ = 4.9m Ω @VGS = 10 V
- Very Low On-resistance R_{DS(ON)}
- Low Crss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability





Absolute Maximum Ratings T_c = 25°C unless otherwise noted

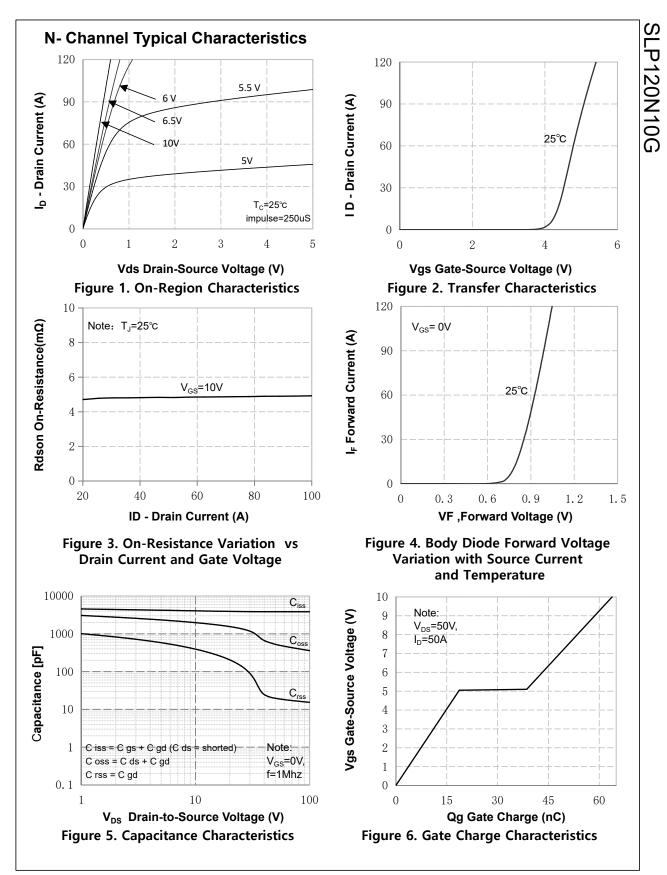
Symbol	Parameter	SLP120N10G	Units
V _{DSS}	Drain-Source Voltage	100	V
	Drain Current - Continuous ($T_c = 25^{\circ}C$)	120	А
ID	- Continuous (T _c = 100°C)	78	А
I _{DM}	Drain Current - Pulsed (Note 1)	480	А
V _{GSS}	Gate-Source Voltage	±20	V
E _{AS}	Single Pulsed Avalanche Energy	638	mJ
PD	Power Dissipation ($T_c = 25^{\circ}C$)	190	W
R _{0JC}	Thermal Resistance, Junction to Case	0.66	°C/W
TJ, Tstg	Operating and Storage Temperature Range	-55 to +150	°
ΤL	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

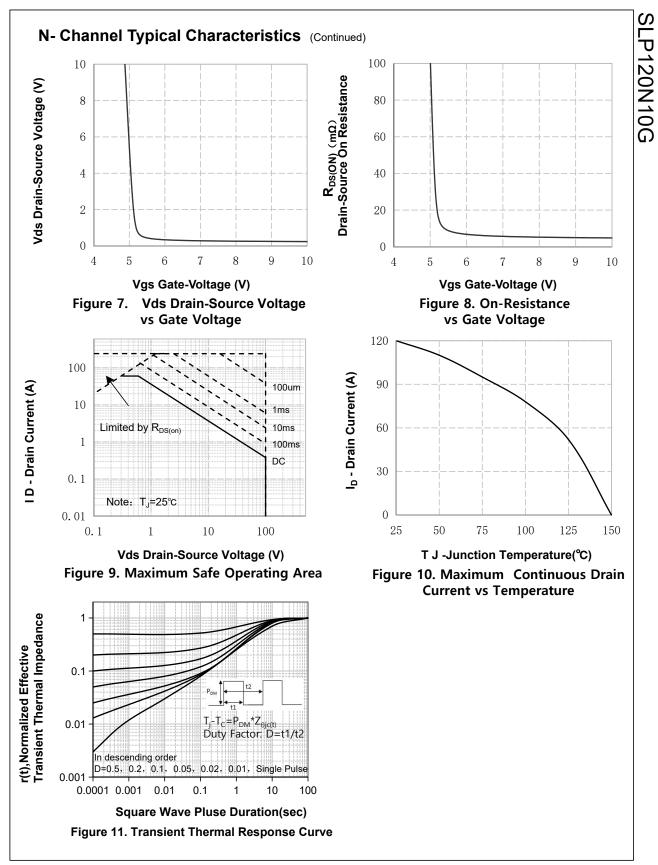
* Drain current limited by maximum junction temperature.

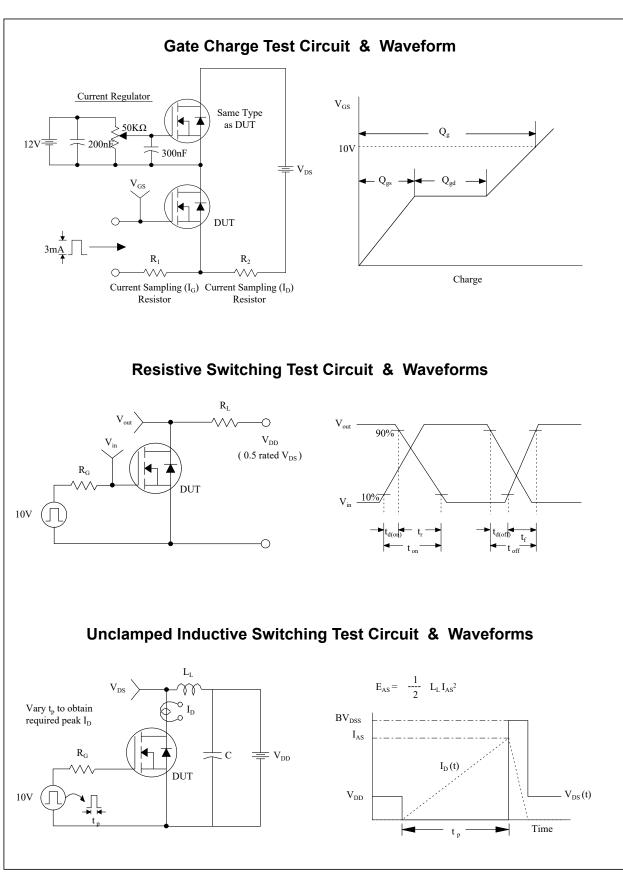
Off Characteristics Vois = 0 V, ID = 250 uA 100 N Ibss Zero Gate Voltage Drain Current Vois = 100 V, Vois = 0 V 1 u Ibss Gate-Body Leakage Current, Forward Vois = 200 V, Vois = 0 V 100 n Ibss Gate-Body Leakage Current, Forward Vois = 200 V, Vois = 0 V 100 n Ibss Gate-Body Leakage Current, Reverse Vois = 250 V, Vois = 0 V -100 n On Characteristics Vois = 10 V, ID = 30A 4.9 6 n Dynamic Characteristics Vois = 25 V, Vois = 0 V, ID = 30A 4.9 6 n Criss Input Capacitance Vois = 25 V, Vois = 0 V, ID = 30A 4.9 6 n Criss Input Capacitance Visit = 100 MHz 14.9 6 n Criss Reverse Transfer Capacitance Visit = 30, Ib=20A Tij=25°C 14.1 - p tit	Part Number To		Top Marking	Pac	ckage Packing Method		MOQ		QTY	
SymbolParameterTest ConditionsMinTypMaxUrOff Characteristics BV_{DSS} Drain-Source Breakdown Voltage $V_{GS} = 0$ V, $I_D = 250$ uA100N I_{DSSF} Gate-Mody Leakage Current, Forward $V_{GS} = 20$, $V_{OS} = 0$ V100n I_{GSSF} Gate-Body Leakage Current, Forward $V_{GS} = 200$, $V_{OS} = 0$ V100n I_{GSSF} Gate-Body Leakage Current, Reverse $V_{GS} = -20$ V, $V_{OS} = 0$ V100n On CharacteristicsVStatic Drain-Source $V_{GS} = -20$ V, $V_{OS} = 0$ V4.0N $V_{GS(m)}$ Gate Threshold Voltage $V_{DS} = V_{GS}$, $I_D = 250$ uA2.0-4.0N $Or, ResistanceV_{SS} = 10$ V, $I_D = 30A$ 4.96nDynamic CharacteristicsCaseOutput Capacitance C_{ms} Input Capacitance $V_{DS} = 25$ V, $V_{GS} = 0$ V,141-p C_{ms} Output Capacitance $V_{DS} = 25$ V, $V_{GS} = 0$ V,158nTurn-On Delay Timetturn-On Rise Time $V_{GS} = 10V$, $V_{DS} = 50V$,158ntTurn-On Rise Time $V_{CS} = 10V$, $V_{CS} = 50V$,158n Q_{g0} Gate-Drain Charge $V_{CS} = 50V$, $I_D = 50A$,63.8n Q_{g0} G	SLP120N10G SLP120N10G		TO-220C		Tube	1000		5000		
SymbolParameterTest ConditionsMinTypMaxUrOff Characteristics BV_{DSS} Drain-Source Breakdown Voltage $V_{GS} = 0$ V, $I_D = 250$ uA100N I_{DSS} Care Gate Voltage Drain Current $V_{OS} = 100$ V, $V_{OS} = 0$ V1u I_{DSSF} Gate-Body Leakage Current, Forward $V_{OS} = 200$, $V_{OS} = 0$ V100n I_{CSSF} Gate-Body Leakage Current, Reverse $V_{OS} = -20$ V, $V_{OS} = 0$ V100nOn Characteristics $V_{GS(m)}$ Gate Threshold Voltage $V_{DS} = V_{GS}$, $I_D = 250$ uA2.0-4.0N $R_{DS(m)}$ Gate Threshold Voltage $V_{DS} = V_{GS}$, $I_D = 250$ uA2.0-4.0N $R_{DS(m)}$ Gate Threshold Voltage $V_{DS} = 100$ V, $I_D = 30A$ 4.96n $R_{DS(m)}$ Input Capacitance $V_{DS} = 25$ V, $V_{GS} = 0$ V,3886-p C_{ms} Reverse Transfer Capacitance $V_{DS} = 25$ V, $V_{GS} = 0$ V,141-p $Switching Characteristics141-p141-pS_{max}Jum-On Blag TimeV_{OS} = 10V, V_{DS} = 50V, I_D = 30A, I_D = 30158nt_{(n)}Turn-On Else TimeV_{OS} = 50V, I_D = 20A TI = 25^{\circ}C158nQ_{max}Gate-Drain ChargeV_{OS} = 50V, I_D = 50A, $										
Control <	Elect	rical Ch	aracteristics	г	ี _C = 25°C เ	unless otherwise noted				
	Symbol		Parameter			Test Conditions	Min	Тур	Max	Units
	Off Ch	aracterist	ics							
		1			$V_{ee} = 0$	V Ia = 250 µA	100			V
$\begin{array}{c ccccc} \hline I_{GSSF} & Gate-Body Leakage Current, Forward & V_{GS} = 20V, V_{DS} = 0V & & & 100 & n \\ \hline I_{GSSR} & Gate-Body Leakage Current, Reverse & V_{GS} = -20 V, V_{DS} = 0 V & & & -100 & n \\ \hline I_{GSSR} & Gate-Body Leakage Current, Reverse & V_{GS} = -20 V, V_{DS} = 0 V & & & -100 & n \\ \hline I_{GSSR} & Gate-Body Leakage Current, Reverse & V_{GS} = -20 V, V_{DS} = 0 V & & & -100 & n \\ \hline D Characteristics & & & & & & & & & & & & & & & & & & &$			5	0						v uA
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$V_{GS(h)} \begin{array}{c c c c c c } \hline Gate Threshold Voltage & V_{DS} = V_{GS}, I_D = 250 \text{ uA} & 2.0 & - & 4.0 & Y_{GS} \\ \hline R_{DS(on)} \begin{array}{c c c c c } \hline Static Drain-Source & V_{GS} = 10 \text{ V}, I_D = 30\text{ A} & & 4.9 & 6 & n \\ \hline R_{DS(on)} \begin{array}{c c c } \hline Static Drain-Source & V_{GS} = 10 \text{ V}, I_D = 30\text{ A} & & 4.9 & 6 & n \\ \hline P_{On-Resistance} & V_{OS} = 25 \text{ V}, V_{GS} = 0 \text{ V}, \\ \hline f = 1.0 \text{ MHz} & & 1368 & - & p \\ \hline & 1368 & - & p \\ \hline & 141 & - & p \\ \hline \end{array}$	IGSSR	Gale-Douy	Leakage Current, Rev	erse	V GS2	20 V, V _{DS} – 0 V			-100	nA
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	On Cha	aracterist	ics							
$\begin{array}{ c c c c c c c c } \hline Ros(on) & On-Resistance & V_{GS} = 10 \ V, \ I_D = 30A & & 4.9 & 6 & m \\ \hline \hline Oynamic Characteristics \\ \hline \hline C_{iss} & Input Capacitance & V_{DS} = 25 \ V, \ V_{GS} = 0 \ V, \\ \hline f = 1.0 \ MHz & & 1368 & - & p \\ \hline \hline & 1368 & - & p \\ \hline \hline & 141 & - & p \\ \hline \hline \hline \\ Switching Characteristics \\ \hline \hline \\ t_{(on)} & Turn-On Delay Time & V_{GS} = 10V, \ V_{DS} = 50V, \\ \hline \\ t_{(off)} & Turn-On Rise Time & V_{GS} = 10V, \ V_{DS} = 50V, \\ \hline \\ t_{1} & Turn-On fise Time & V_{GS} = 10V, \ V_{DS} = 50V, \\ \hline \\ r_{1} & Turn-Off Delay Time & R_{L} = 3\Omega, \ I_{D} = 20A \ T_{1} = 25^{\circ}C & & 158 & & m \\ \hline \\ \hline \\ q_{g} & Gate-Source Charge & V_{DS} = 50V, \ I_{D} = 50A, \\ \hline \\ q_{gd} & Gate-Drain Charge & V_{DS} = 10V & & 63.8 & & m \\ \hline \\ \hline \\ Drain-Source Diode Characteristics and Maximum Ratings \\ \hline \\ I_{SM} & Maximum Pulsed Drain-Source Diode Forward Current & & & 120 & M \\ \hline \\ V_{SD} & Drain to Source Diode Forward Voltage, V_{GS} = 0V, \ I_{SD} = 30A, T_{J} = 25^{\circ}C & & & 1.2 & M \\ \hline \end{array}$	V _{GS(th)}	Gate Three	shold Voltage		V _{DS} = V	∕ _{GS} , I _D = 250 uA	2.0	-	4.0	V
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Is Maximum Continuous Drain-Source Diode Forward Current 120 120 Ism Maximum Pulsed Drain-Source Diode Forward Current 480 120 VsD Drain to Source Diode Forward Voltage, VGS = 0V, ISD = 30A, TJ = 25°C 1.2 120	Droin (ada Charactariati	<u> </u>	ad Max	imum Potingo				
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<u> </u>										A
Irr Reverse recovery time, IF = 20A di/dt=100A/µs - 61 n										V
Q _{rr} Reverse recovery charge, I F =20A dlF/dt=100A//µs - 105 n		Reverse recovery time,I _F =20A dl/dt=100A/µs Reverse recovery charge,I _F =20A dlF/dt=100A//µs								ns nC

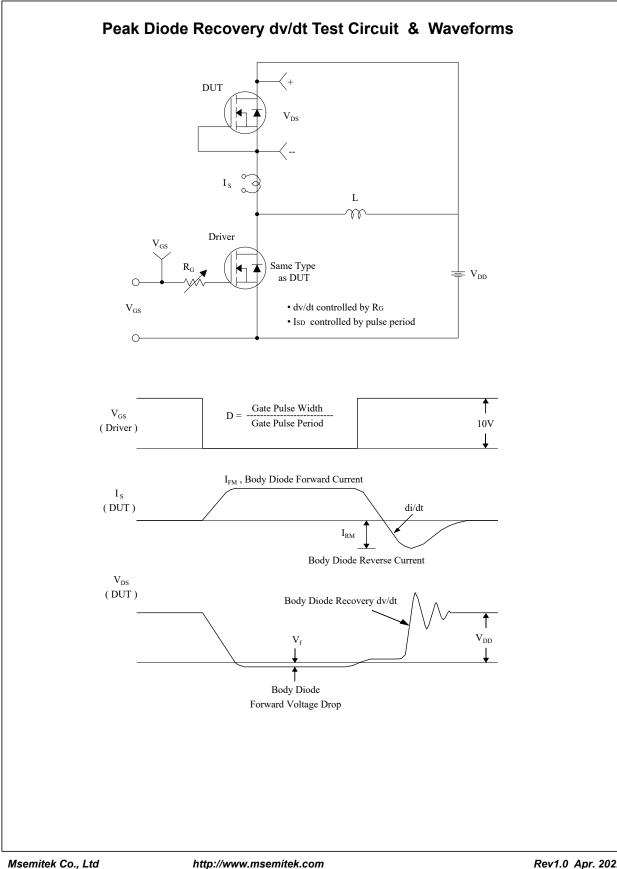
Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
 EAS condition: T_J=25°C, V_{DD}=25V, V_G=10V, L=0.5mH.
 Pulse Test: Pulse Width≤300µs, Duty Cycle≤0.5%

SLP120N10G

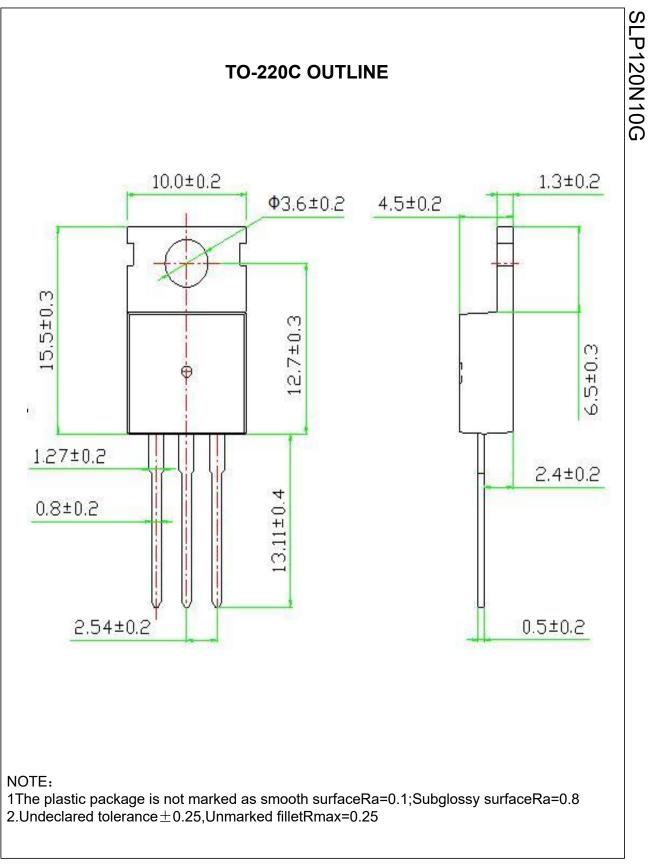








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