

N-Channel Power MOSFET

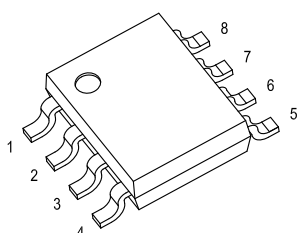
● Features

V_{DS}	$R_{DS(ON)MAX}$	I_D
30V	13.5m Ω @10V	7.5A
	20m Ω @4.5V	

● General Description

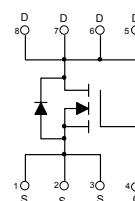
- Battery Switch
- Load Switch

● Pin Configurations



SOP8

Equivalent Circuit



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	7.5	A
Pulsed Drain Current	I_{DM}	50	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	72	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ +150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	$^{\circ}\text{C}$

(1). E_{AS} condition: $V_{DD}=50\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

Electrical Characteristics

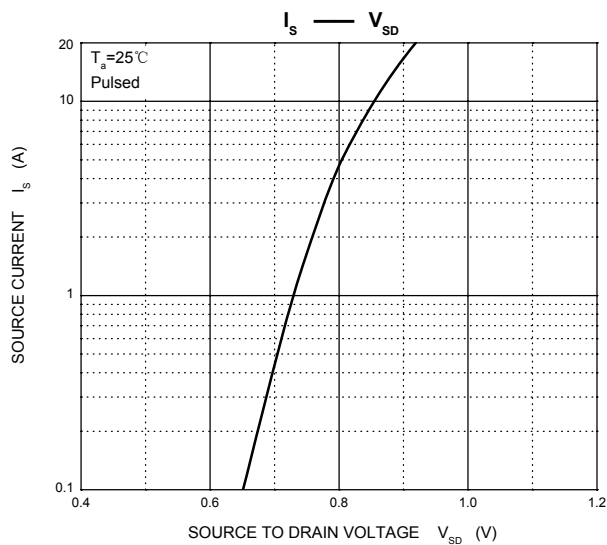
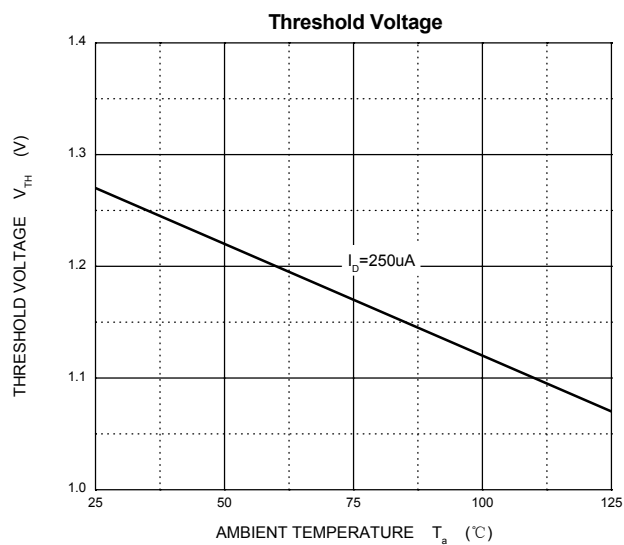
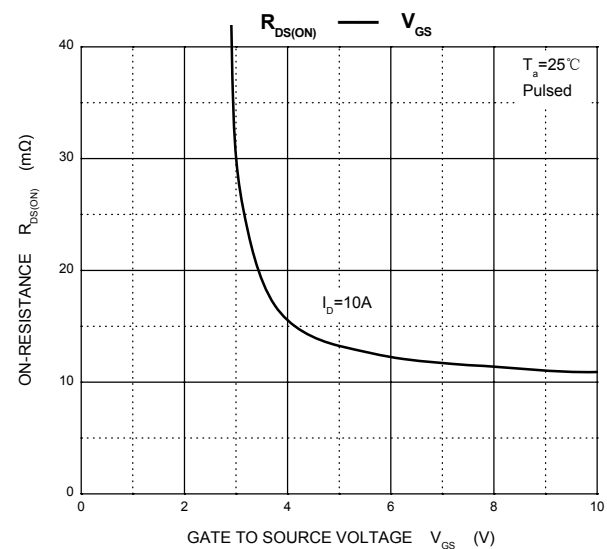
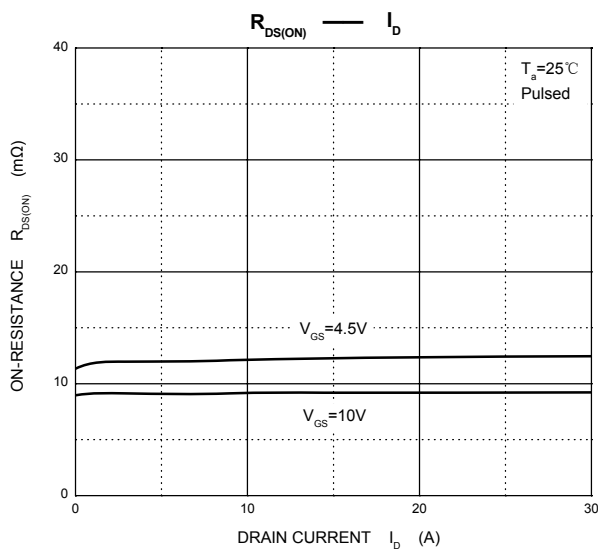
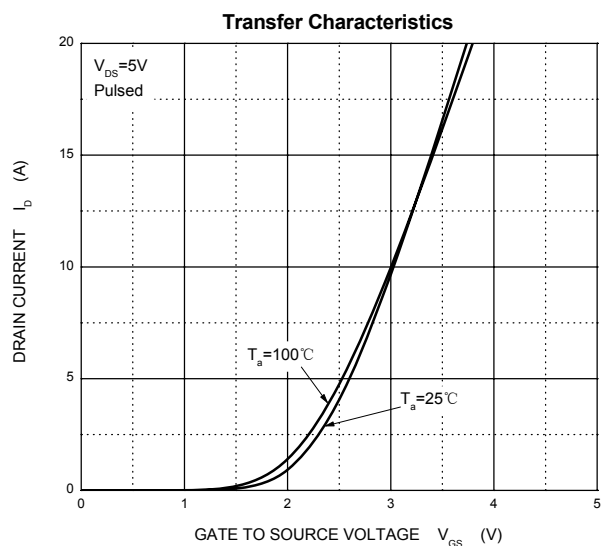
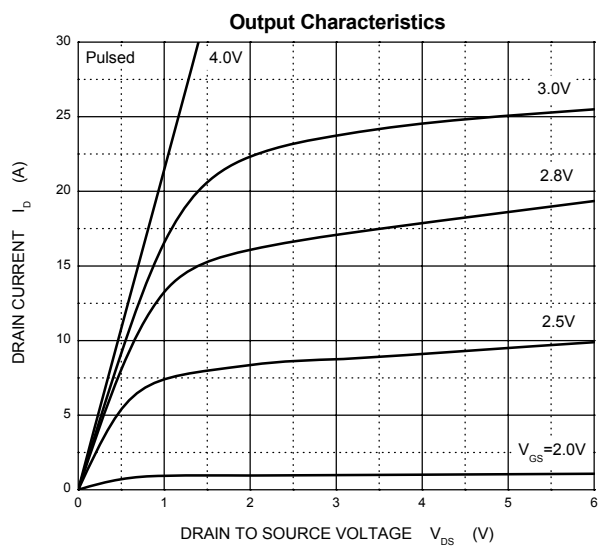
$T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
On characteristics (note1)						
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.3	3.0	V
Static drain-source on-sate resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		9	13.5	mΩ
		V _{GS} =4.5V, I _D =5A		12	20	mΩ
Forward transconductance	g _{FS}	V _{DS} =15V, I _D =5A		8		S
Dynamic characteristics (note 2)						
Input capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V, f =1MHz		9130		pF
Output capacitance	C _{oss}			625		
Reverse transfer capacitance	C _{rss}			387		
Switching characteristics (note 2)						
Total gate charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =10A			40	nC
Gate-source charge	Q _{gs}			5.5		
Gate-drain charge	Q _{gd}			3.7		
Turn-on delay time	t _{d(on)}	V _{DD} =25V,I _D =1A, V _{GS} =10V,R _G =6Ω, R _L =25Ω			15	ns
Turn-on rise time	t _r				15	
Turn-off delay time	t _{d(off)}				60	
Turn-off fall time	t _f				25	
Gate Resistance	R _g	f =1MHz, V _{DS} =0V, V _{GS} =0V,	0.2		0.8	Ω
Drain-Source Diode Characteristics						
Drain-source diode forward voltage(note1)	V _{SD}	V _{GS} =0V, I _S =2.3A			1.1	V
Continuous drain-source diode forward current	I _S				7.5	A
Pulsed drain-source diode forward current	I _{SM}				50	A

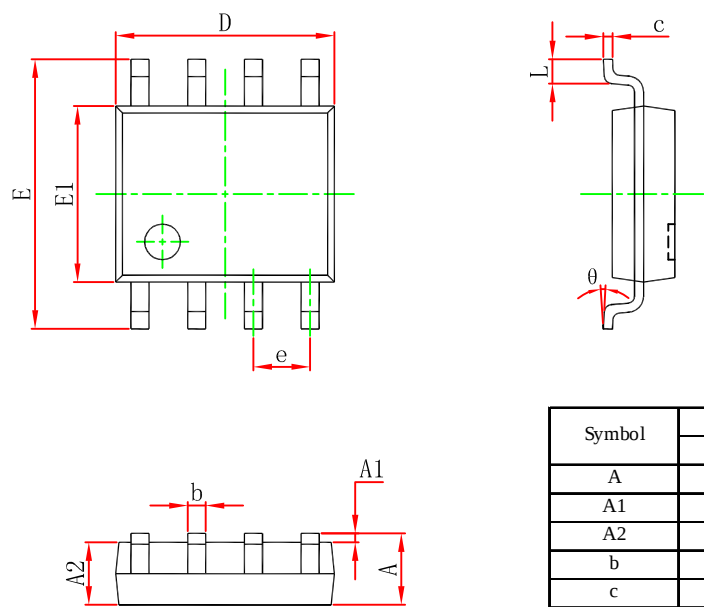
Notes:

1. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics



Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°