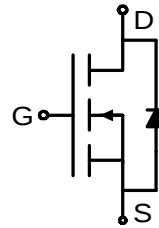


Description

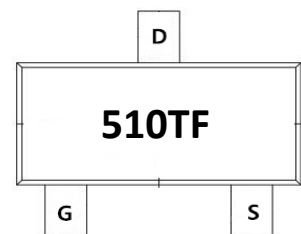
The 5N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

$V_{DS} = 100V$ $I_D = 5A$

$R_{DS(ON typ)} = 90m\Omega @ V_{GS}=10V$

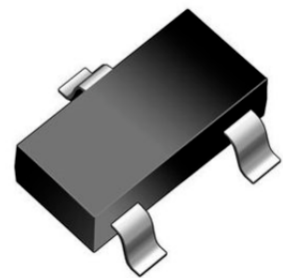


Application

Battery protection

Load switch

Uninterruptible power supply



Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	5	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	3.2	A
I_{DM}	Pulsed Drain Current ²	15	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation ³	3.1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-ambient(steady state) ¹	100	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-ambient($t < 10s$) ¹	40	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	108	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =4A	---	90	125	mΩ
		V _{GS} =4.5V, I _D =2A	---	115	145	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.7	2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =85°C	---	---	50	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2.3	4.6	
Q _g	Total Gate Charge (10V)	V _{DS} =30V, V _{GS} =10V, I _D =4A	---	3.57	---	nC
Q _{gs}	Gate-Source Charge		---	0.76	---	
Q _{gd}	Gate-Drain Charge		---	0.71	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =30V, V _{GS} =10V, R _G =3.3, I _D =1A	---	11	---	ns
T _r	Rise Time		---	6	---	
T _{d(off)}	Turn-Off Delay Time		---	30	---	
T _f	Fall Time		---	4	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	182	---	pF
C _{oss}	Output Capacitance		---	30	---	
C _{rss}	Reverse Transfer Capacitance		---	3.6	---	
I _s	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	2	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V

Note :

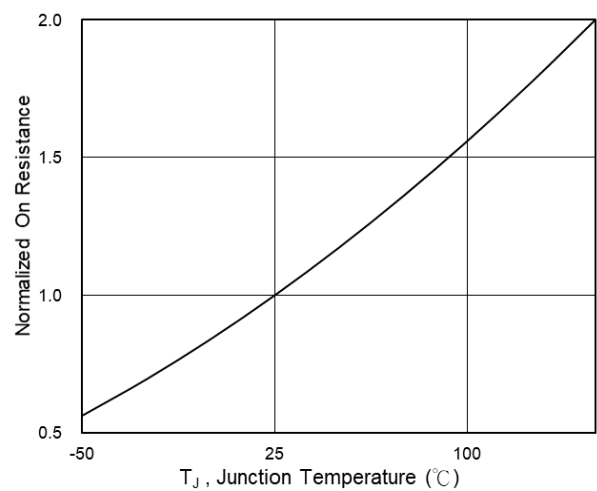
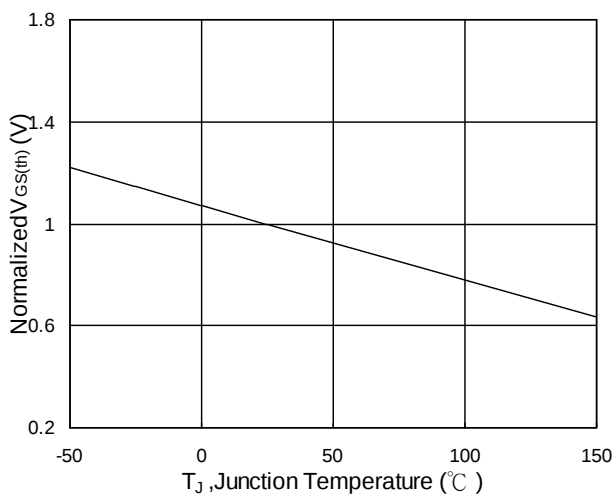
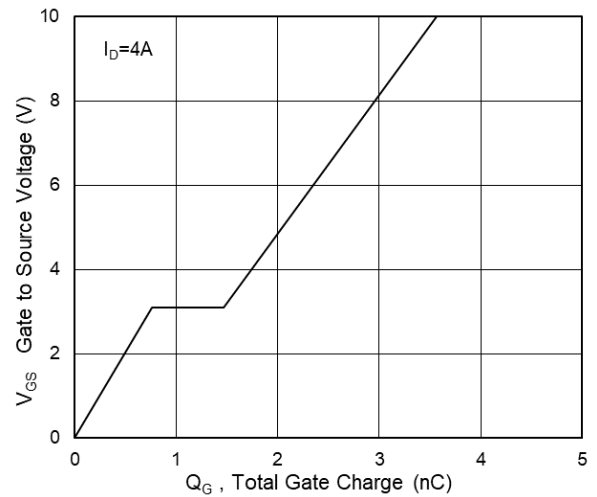
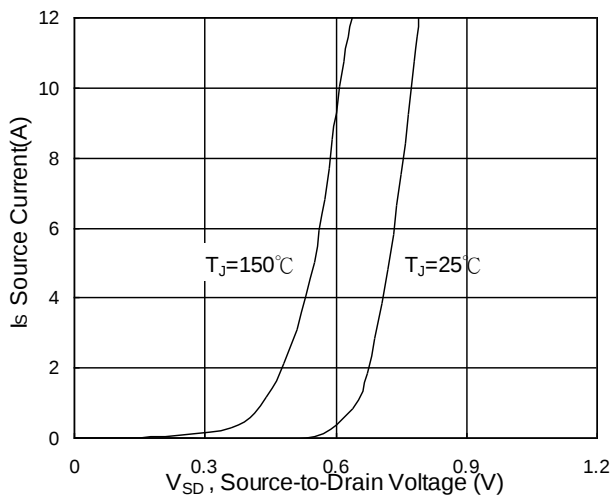
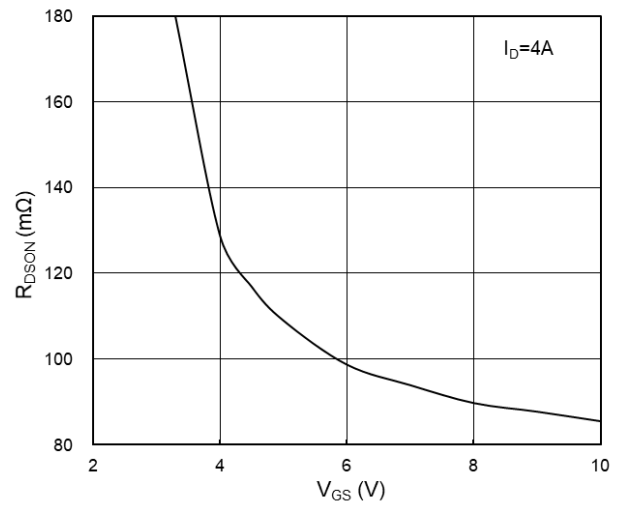
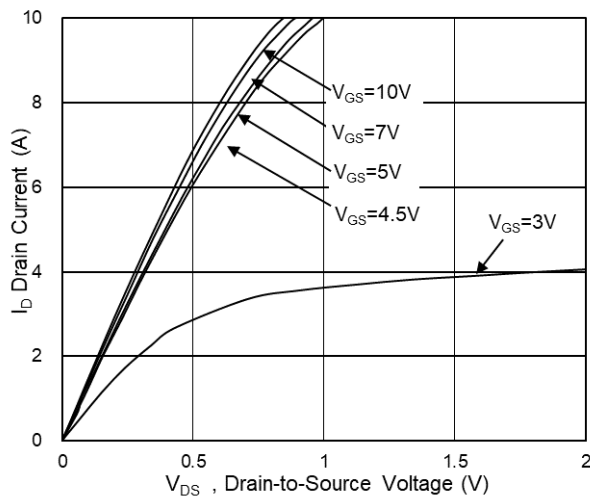
1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

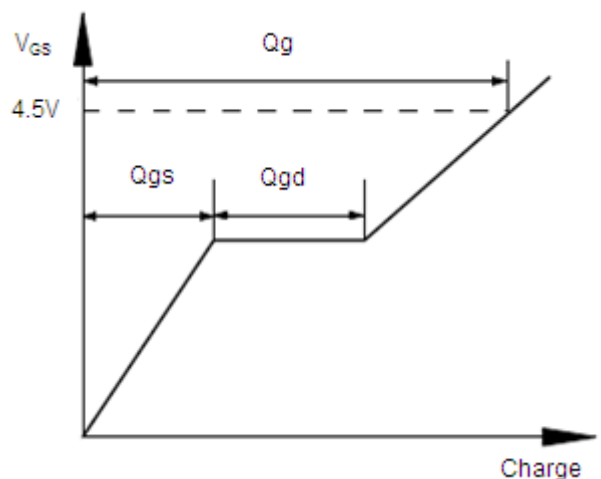
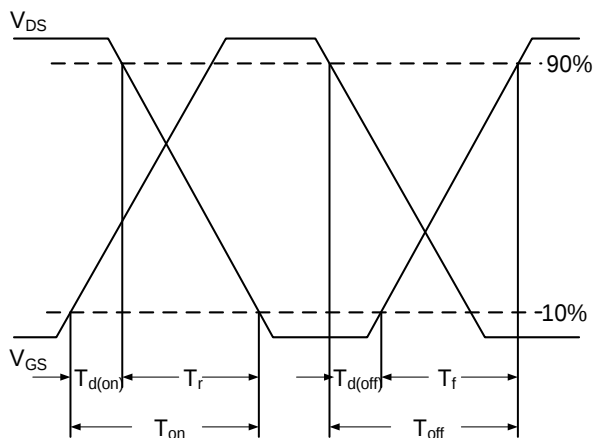
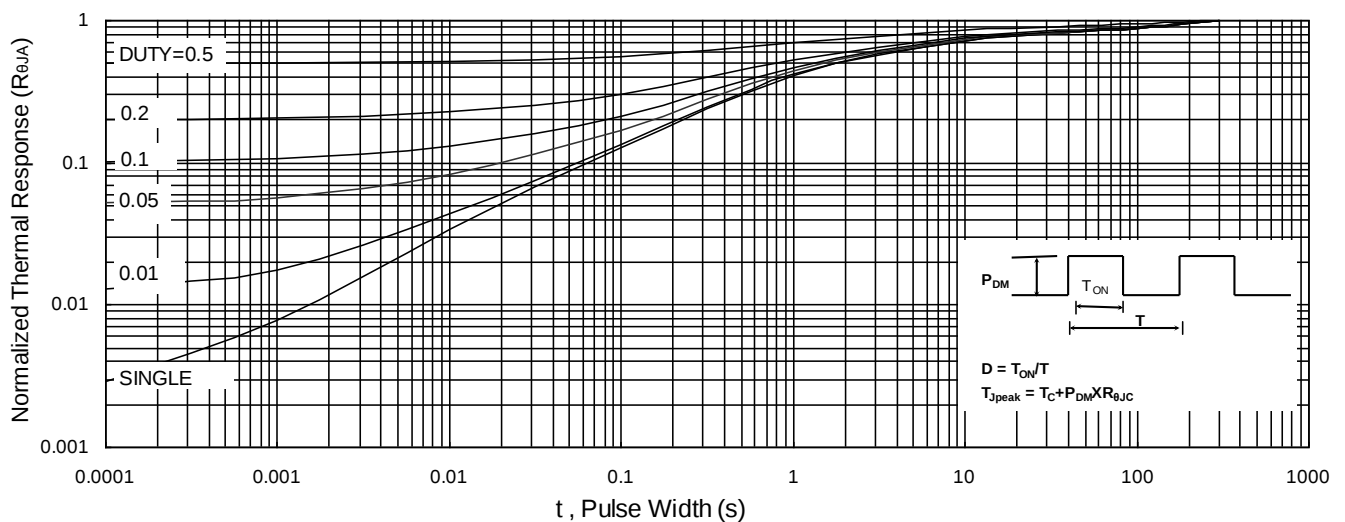
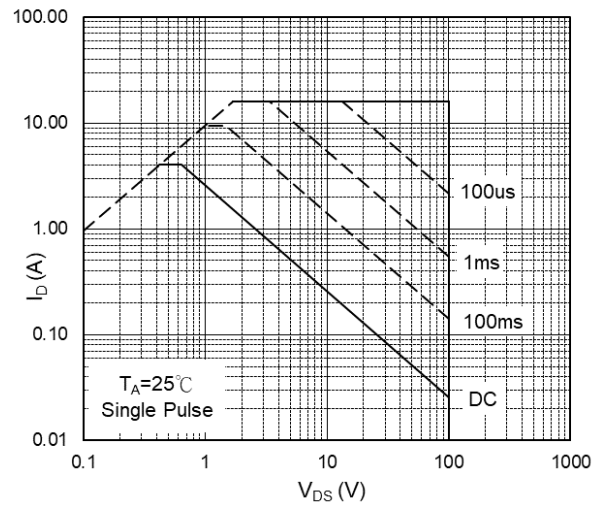
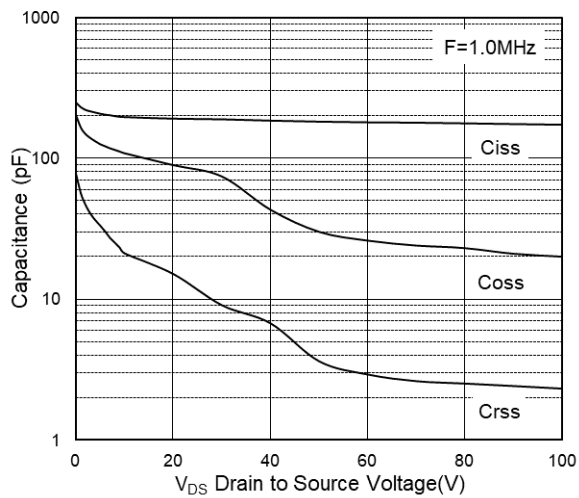
2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

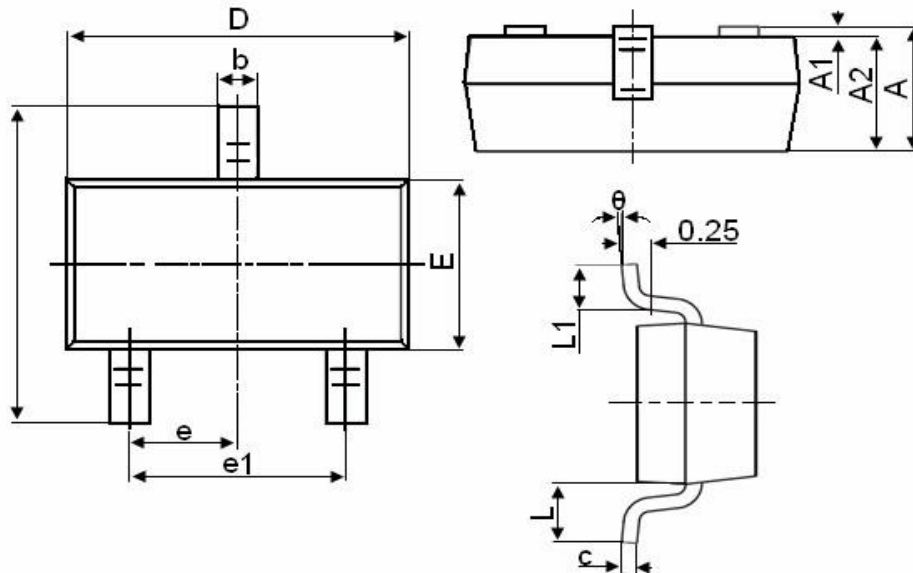
3.The power dissipation is limited by 150°C junction temperature

4.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics





Package Mechanical Data-SOT-23


Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°