

SOT-23 Plastic-Encapsulate Mosfets

SPN2324S23RGB-ALJ

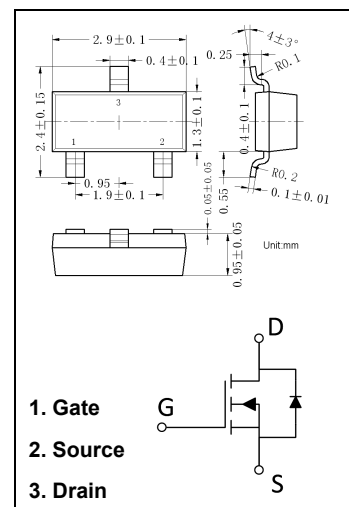
N-Channel Enhancement Mode MOSFET

Features

- 100V/3A, $R_{DS(on)} = 310m\Omega @ V_{GS} = 10V$
- High density cell design for extremely low $R_{DS(on)}$
- Exceptional on-resistance and maximum DC current capability
- Low $R_{DS(on)}$
- Lead (Pb)-free Available

Applications

- Powered System
- DC/DC Converter
- Load Switch



Marking:2324

Description

This device is the N-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. It has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

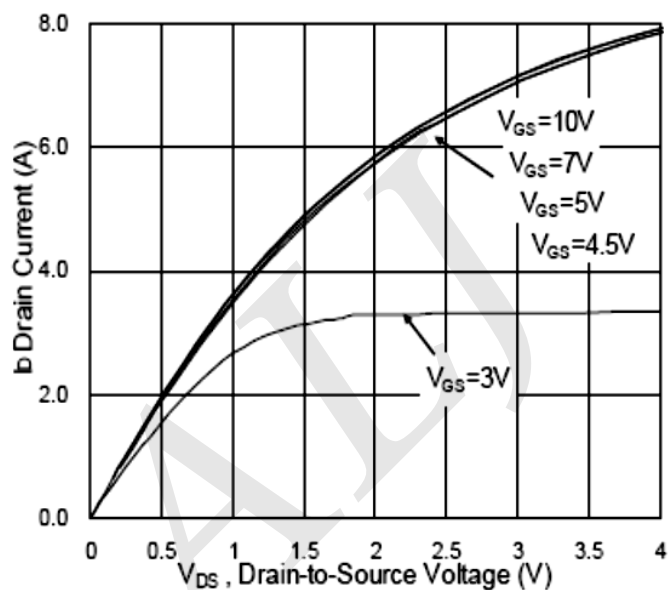
Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source voltage	100	V
V_{GSS}	Gate-Source voltage	± 30	
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_a = 25^\circ\text{C}$	A
		$T_a = 70^\circ\text{C}$	
I_{DM}	Pulsed Drain Current	10	W
P_D	Power Dissipation	$T_a = 25^\circ\text{C}$	
		$T_a = 70^\circ\text{C}$	
T_J	Operating Junction Temperature	$-55 \sim +150$	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	$-55 \sim +150$	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C}$

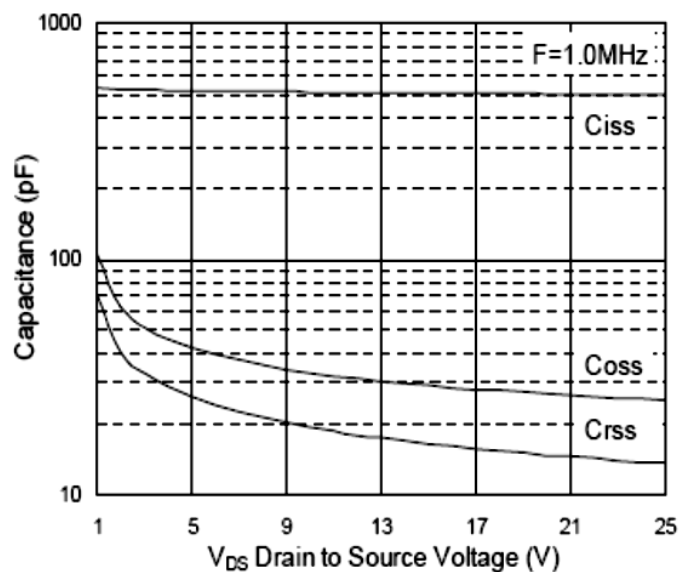
Electrical Characteristics (T_a=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	100			V
V _{GS(th)}	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
I _{GSS}	Gate-body Leakage current	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 80V, V _{GS} = 0V			1	μA
		V _{DS} = 80V, V _{GS} = 0V, T _J = 125°C			5	
I _{D(on)}	On-State Drain Current	V _{DS} ≥ 5V, V _{GS} = 10V	3.0			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = 10V, I _D = 3A		0.26	0.31	Ω
g _{fs}	Forward Trans conductance	V _{DS} = 10V, I _D = 3A		24		S
V _{SD}	Diode Forward Voltage	I _S = 1A, V _{GS} = 0V			1.2	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} = 80V, V _{GS} = 10V, I _D = 5A		9	13	nC
Q _{gs}	Gate-Source Charge			2		
Q _{gd}	Gate-Drain Charge			1.4		
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz		508		pF
C _{oss}	Output Capacitance			29		
C _{rss}	Reverse Transfer Capacitance			16.5		
t _{d(on)}	Turn-On Delay Time	V _{DD} = 50V, R _L = 10Ω I _D = 3A, V _{GEN} = 10V R _G = 3.3Ω		2		ns
t _r	Rise Time			21.5		
t _{d(off)}	Turn-Off Delay Time			11.2		
t _f	Fall Time			18.8		

Typical Characteristics

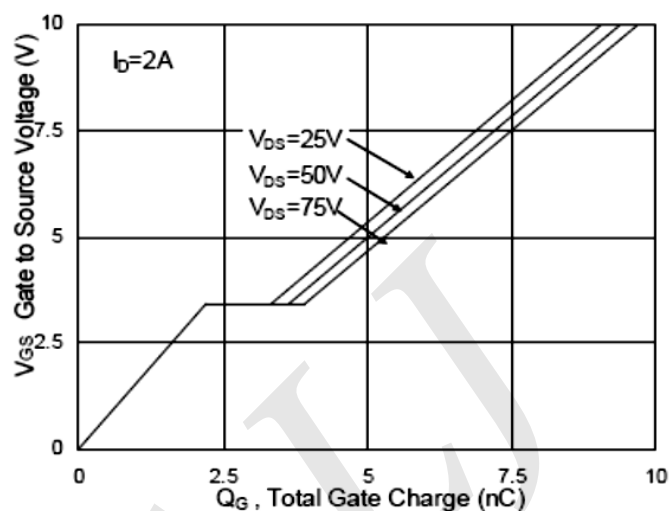


Output Characteristics

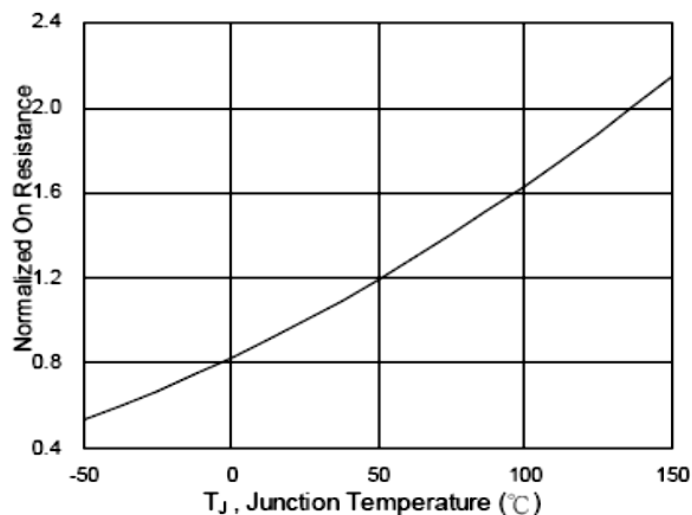


Capacitance

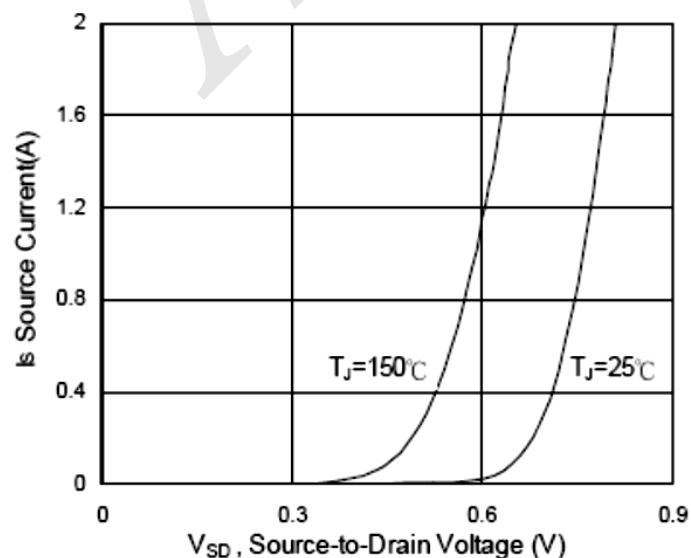
Typical Characteristics (Cont.)



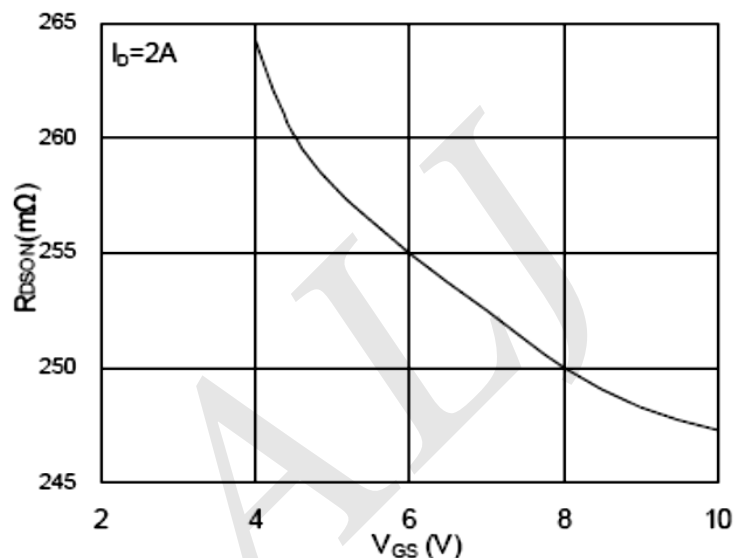
Gate Charge



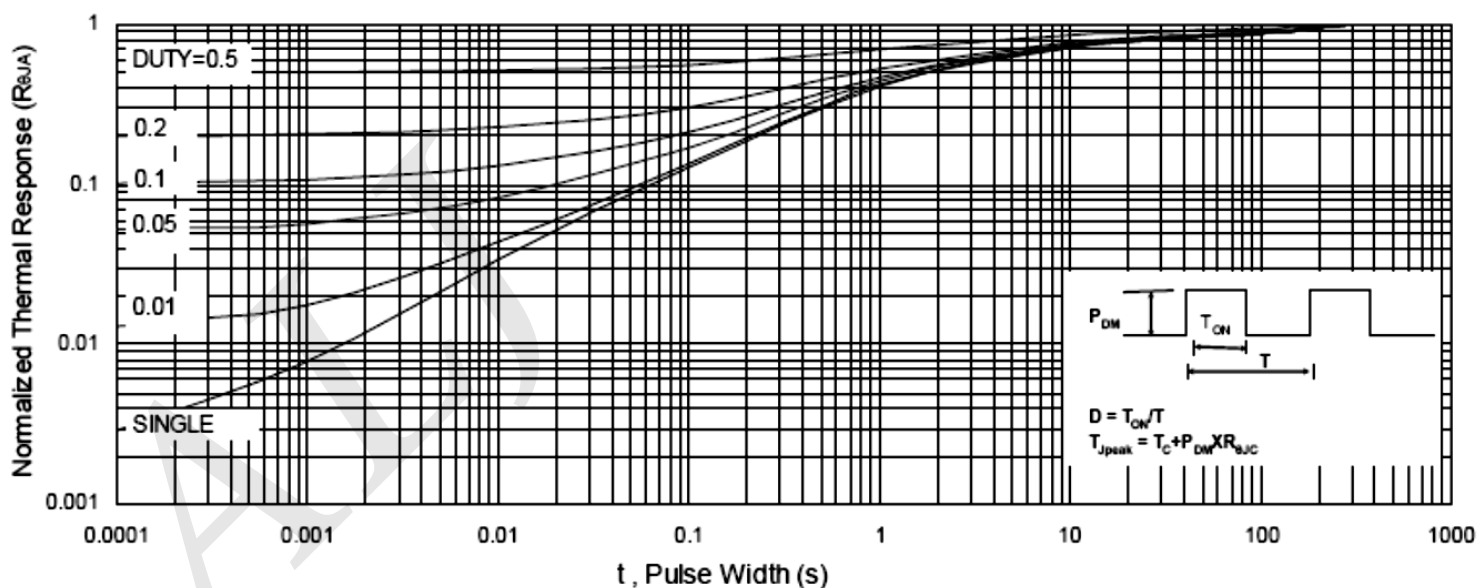
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-Source Voltage



Normalized Thermal Transient Impedance, Junction to Foot