

FEATURES

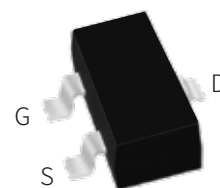
- Generation V Technology
- Ultra Low On-Resistance
- Low Profile (<1.1mm)
- Available in Tape and Reel
- Fast Switching

APPLICATION

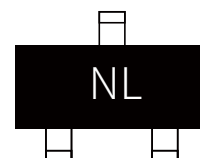
- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0

APPROVALS

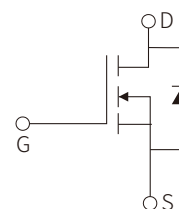
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



SOT-23



Marking



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Drain Current-Continuous	$T_A=25^{\circ}\text{C}$	I_D	1.2	A
Drain Current-Continuous	$T_A=70^{\circ}\text{C}$	I_D	0.93	A
Pulsed Drain Current		I_{DM}	7.3	A
Gate-Source Voltage		V_{GS}	± 20	V
Total Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	540	mW
Peak Dipde Recovery dv/dt(note 2)		dv/dt	5.0	V/ns
Linear Derating Factor			4.3	mW/ $^{\circ}\text{C}$
Junction-to-Ambient(note 4)		$R_{\theta JA}$	230	$^{\circ}\text{C}/\text{W}$
Storage temperature		T_{STG}	-55 to 150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	Reference to 25, $I_D=1mA$		0.029		V/ $^{\circ}\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1.0	μA
Gate-to-Source Forward Leakag	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0			V
Static Drain-Source On-Resistance(Note3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.91A$			0.25	Ω
		$V_{GS}=4.5V, I_D=0.46A$			0.40	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=0.46A$	0.87			S
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz, \text{See Fig.5}$		85		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			15		
Turn-On Delay Time	$t_{d(on)}$	$R_D=16\Omega, R_G=6.2\Omega$ $V_{DD}=15V, I_D=0.91A$		3.9		ns
Turn-On Rise Time	t_r			4.0		
Turn-Off Delay Time	$t_{d(off)}$			9.0		
Turn-Off Fall Time	t_f			1.7		
Diode forward voltage (note 2)	V_{SD}	$I_S=0.91A, V_{GS}=0V, T_J=25^{\circ}\text{C}$			1.2	V
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=24V, I_D=0.91A$		3.3	5.0	nC
Gate Source Charge	Q_{gs}			0.48	0.72	
Gate Drain Charge(note 2)	Q_{gd}			1.1	1.7	
Diode forward current(Body Diode)	I_S	MOSFET symbol showing the integral rever p-n junction diod 			0.54	A
Pulsed Source Curren (Body Diode)(note 1)	I_{SM}				7.3	
Reverse Recovery Time	t_{rr}	$I_F=0.91A$ $dI/dt=100A/\mu s, T_J=25^{\circ}\text{C}$		26	40	ns
Reverse Recovery Charge(note 3)	Q_{rr}			22	32	nC

Note:1. Repetitive rating; pulse width limited by max. junction temperature

Note:2. $I_{SD} \leq 0.91A, di/dt \leq 120A/\mu s, V_{DD} \leq V_{(BR)DSS}, T_J \leq 150^{\circ}\text{C}$

Note:3. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

Note:4. Surface mounted on FR-4 board $t \leq 5sec$

PARAMETER CHARACTERISTIC CURVE

Fig 1: Typical Output Characteristics

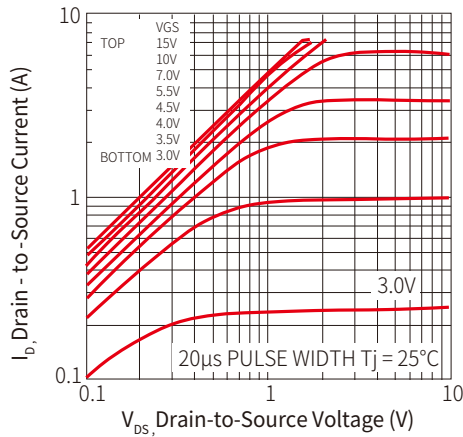


Figure 2: Typical Output Characteristics

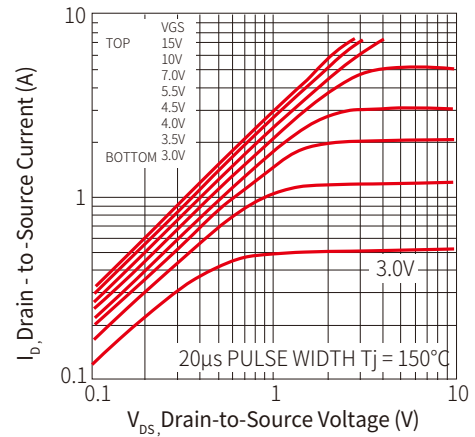


Figure 3: Typical Transfer Characteristics

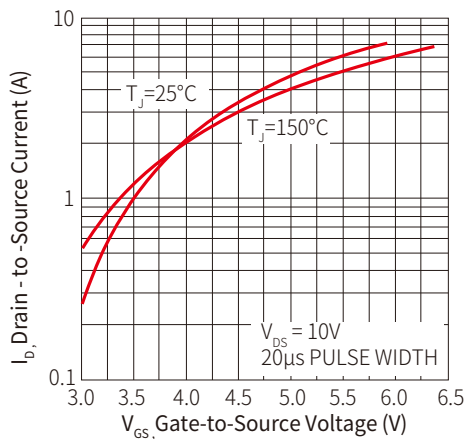


Figure 4: Normalized On-Resistance Vs. Temperature

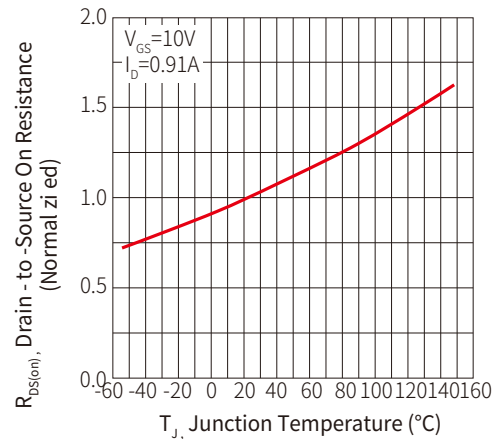


Figure 5: Typical Capacitance Vs. Drain-to-Source Voltage

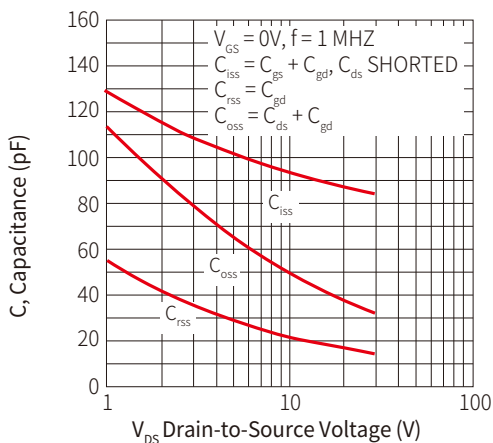


Figure 6: Typical Gate Charge Vs. Gate-to-Source Voltage

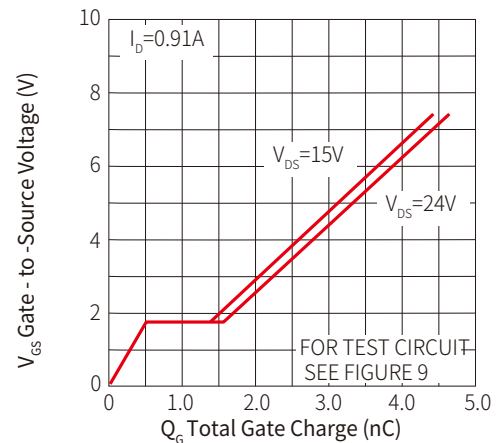


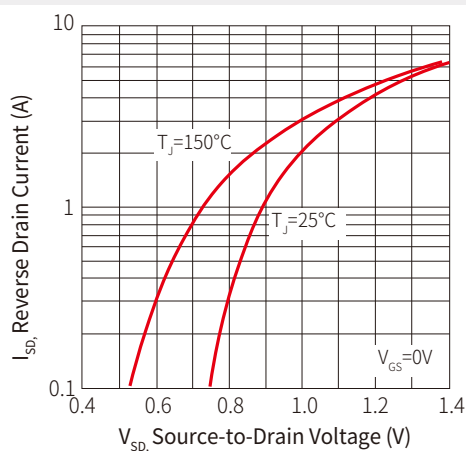
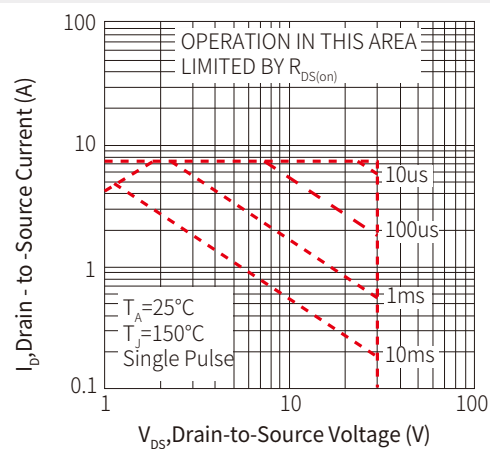
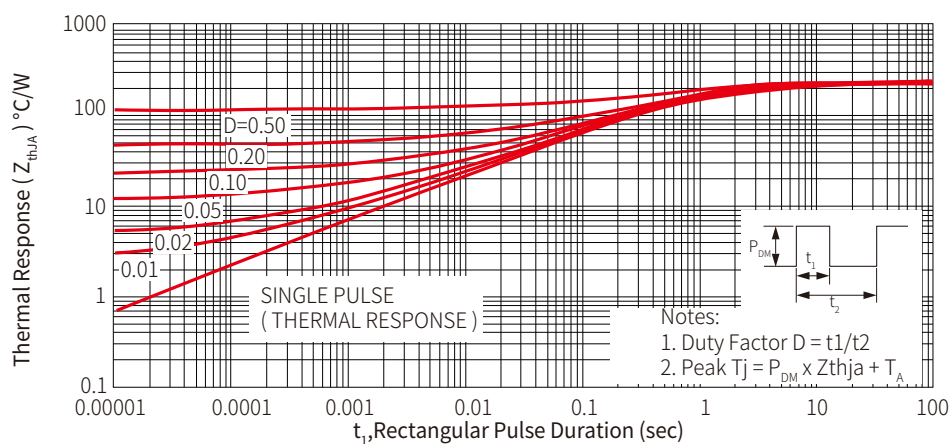
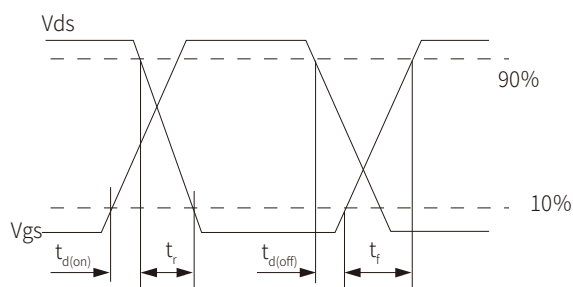
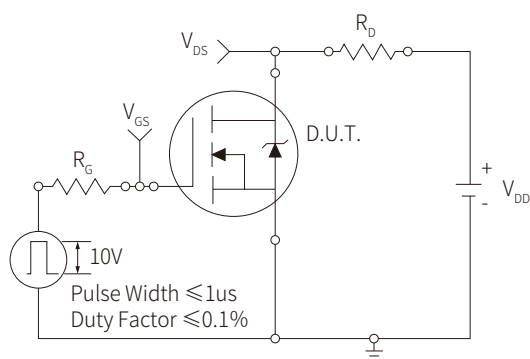
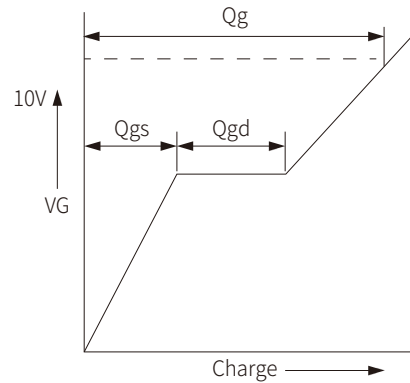
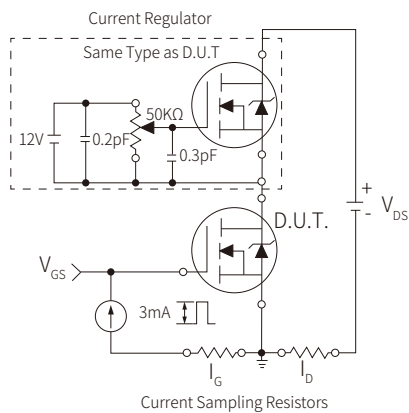
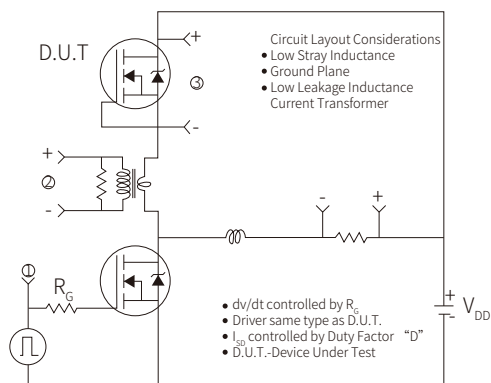
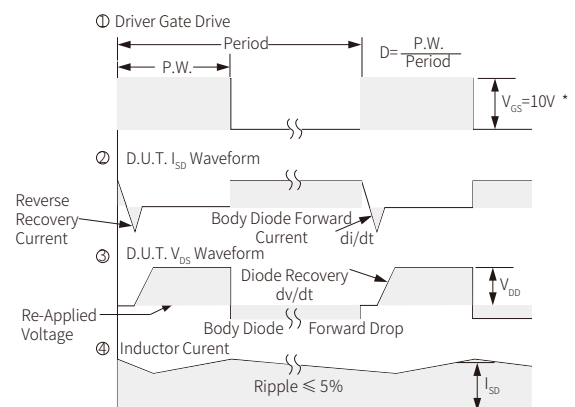
Figure 7: Typical Source-Drain Diode Forward Voltage

Figure 8: Maximum Safe Operating Area

Figure 9: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Figure 10: Switching Time Test Circuit & Waveforms


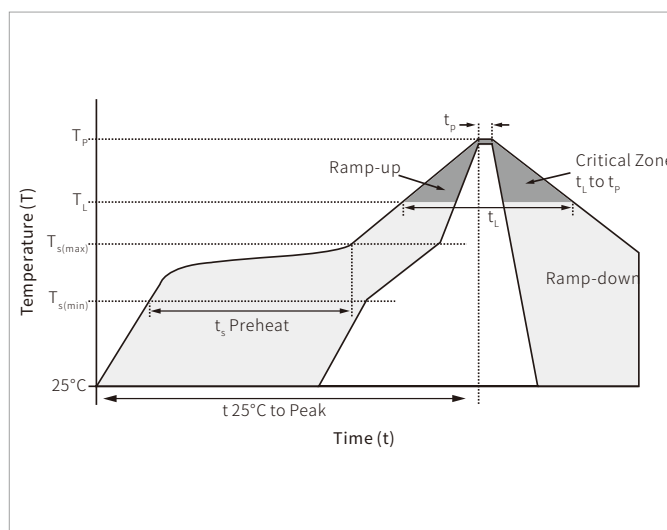
Figure 11: Basic Gate Charge Waveform & Test Circuit

Figure 12: For N-Channel HEXFETS


* $V_{GS}=5V$ for Logic Level Devices

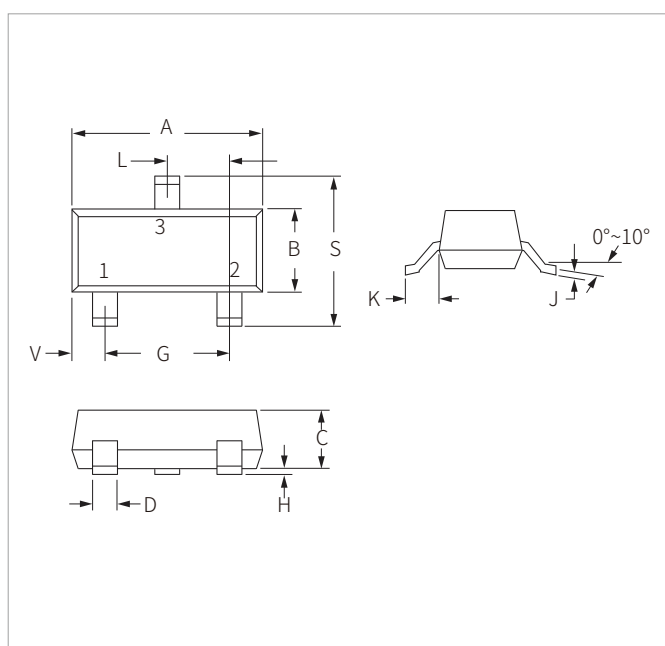


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

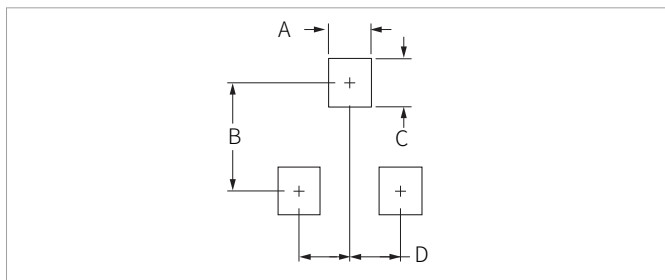


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNM2803S	SOT-23	3000PCS	7"

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