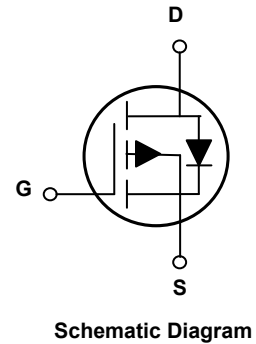
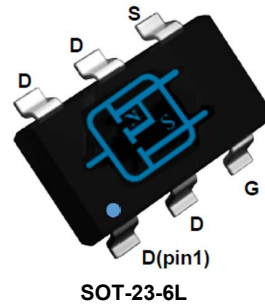


Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	35mΩ
I_D	-5A



Features and Benefits

- Standard Turbo MOSFET process technology.
- Optimized the cell structure.
- Low on-resistance and low gate charge.
- Featuring low switching and drive losses.
- Fast switching and reverse body recovery.
- High ruggedness and robustness.



Description

The ST series products utilizes Norsem's outstanding standard turbo process and packaging techniques to achieve ultral low on-resistance and low gate charge and to provide the industry's best-in-class performance.

These features make this series products extremely efficient, temperature characteristics and reliable for use in power management, synchronous rectification, battery protection, load switch and a wide variety of other applications.

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous ¹	I_D	-5	A
Drain Current-Pulsed ¹	I_{DM}	-20	A
Maximum Power Dissipation	P_D	1.4	W
Thermal Resistance Junction-to-Ambient ²	$R_{\theta JA}$	90	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	-0.5	-0.7	-1	V
Drain Static-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-5A	-	29	35	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	37	48	mΩ
Gate Resistance	R _g	V _{DS} =0V, f=1mHz	-	14	-	Ω
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-3A	4	-	-	S
Dynamic and Switching Characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1MHz	-	688	-	pF
Output Capacitance	C _{oss}		-	124	-	
Reverse Transfer Capacitance	C _{rss}		-	115	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V, R _{GEN} =6Ω V _{GS} =-4.5V, I _D =-1A	-	5.8	-	nS
Rise Time	t _r		-	2.2	-	
Turn-Off Delay Time	t _{d(off)}		-	95	-	
Fall Time	t _f		-	45	-	
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-4.5A V _{GS} =-5V	-	17.4	-	nC
Gate-Source Charge	Q _{gs}		-	1.9	-	
Gate-Drain Charge	Q _{gd}		-	2.5	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Diode Forward Voltage ³	V _{SD}	V _{GS} =0V, I _S =-1.3A	-	-0.65	-1.3	V
Reverse Recovery Time	T _{rr}	V _R =-10V, I _D =-4.5A	-	9.35	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt=100A/us	-	1.87	-	nC

Notes:

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. Surface mounted on 1in² FR4 Board, $t \leq 10$ sec.
3. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristic Curves

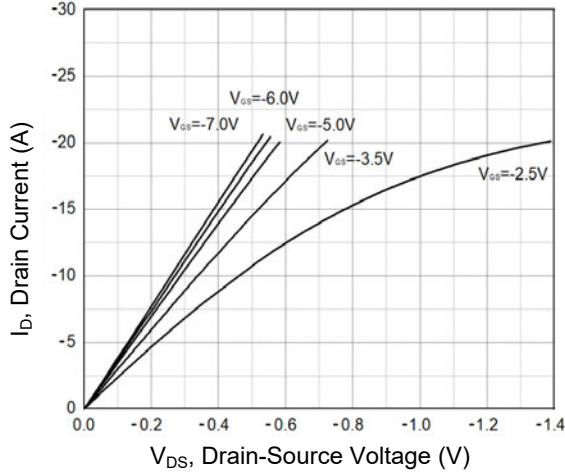


Figure 1. Output Characteristics

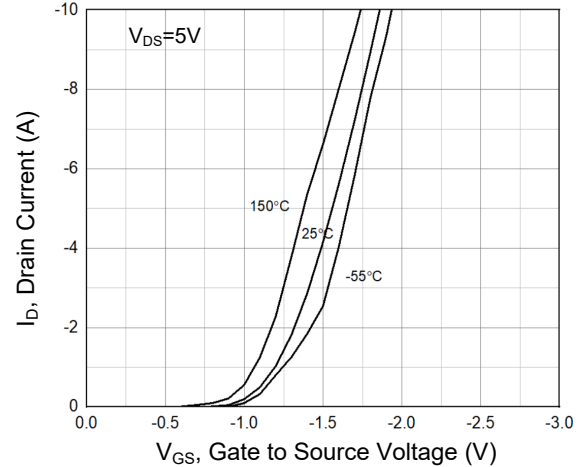


Figure 2. Transfer Characteristics

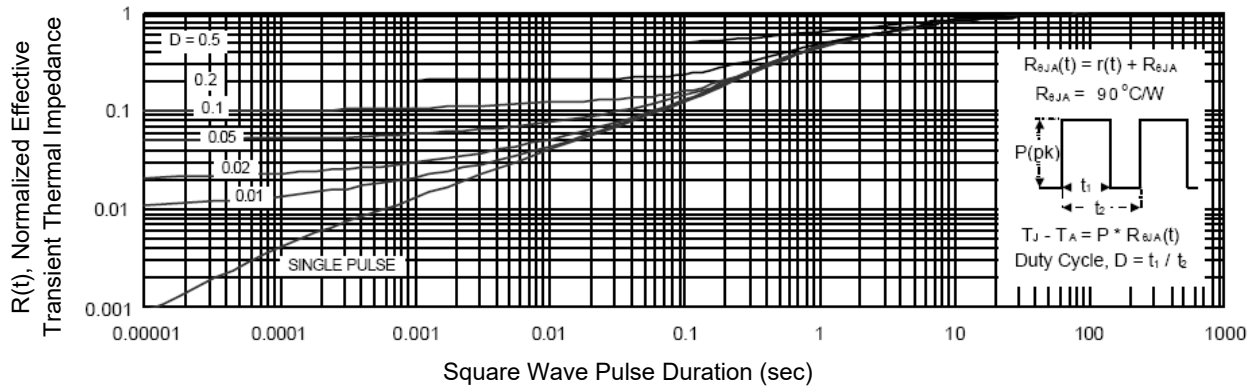


Figure 3. Normalized Maximum Transient Thermal Impedance

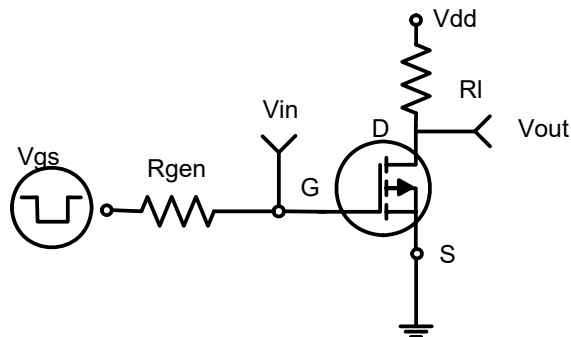


Figure 4. Switching Test Circuit

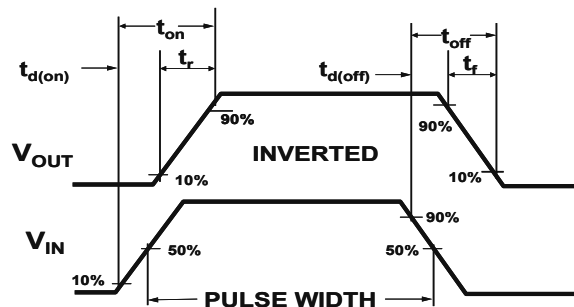
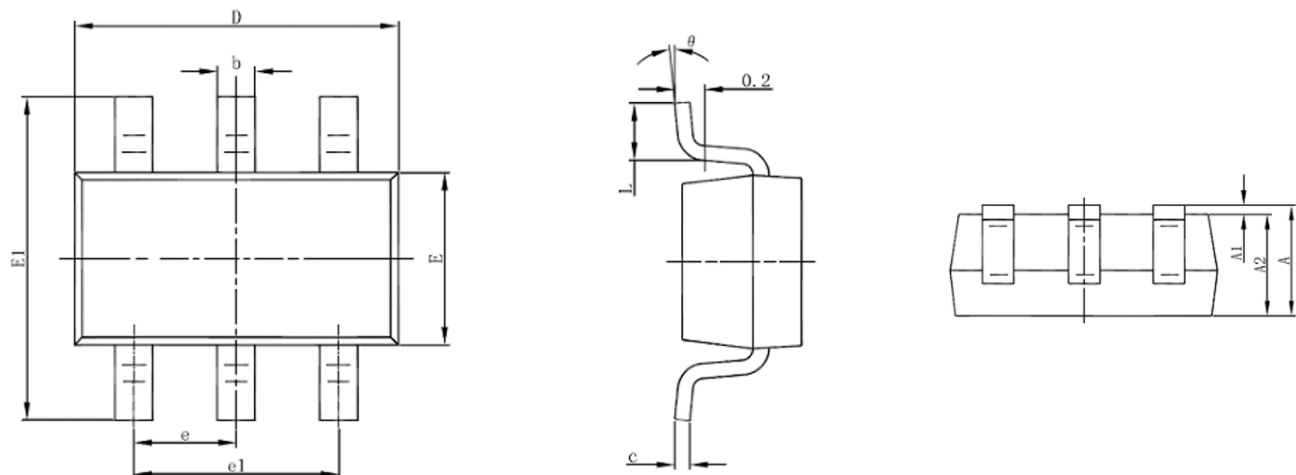


Figure 5. Switching Waveforms

Package Outline Dimensions (SOT-23-6L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.450	0.041	0.057
A1	0.000	0.150	0.000	0.006
A2	0.900	1.300	0.035	0.051
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
NS2429	SOT-23-6L	2429	Tape & Reel	3,000 pcs / 7" Reel