



## NM2312B

6.8A, 20V N-CHANNEL MOSFET

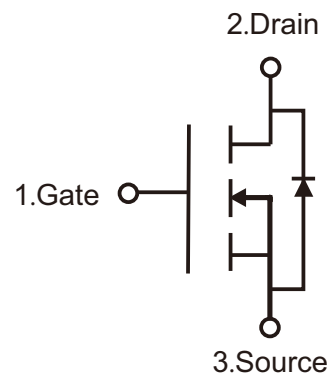
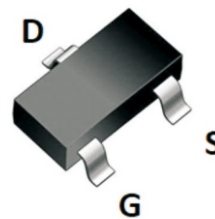
### Features

- $R_{DS(ON)} \leq 20m\Omega$  @  $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 28m\Omega$  @  $V_{GS}=2.5V$
- Trench Power LV MOSFET Technology
- High Power and Current Handling Capability

### Application

- Load Switch
- PWM Application

SOT-23



### Absolute Maximum Ratings (TA=25°C, unless otherwise specified)

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 10$	V
Continuous Drain Current	$I_D$	6.8	A
Pulsed Drain Current (Note1)	$I_{DM}$	27	A
Power Dissipation	$P_D$	1.25	W
Thermal Resistance, Junction-to-Ambient(Note2)	$R_{\theta JA}$	100	$^{\circ}C/W$
Operation Junction Temperature and Storage Temperature	$T_j, T_{stg}$	-55 ~ +150	$^{\circ}C$

#### Notes:

1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
2.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JC}$  is guaranteed by design, while  $R_{\theta JA}$  is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

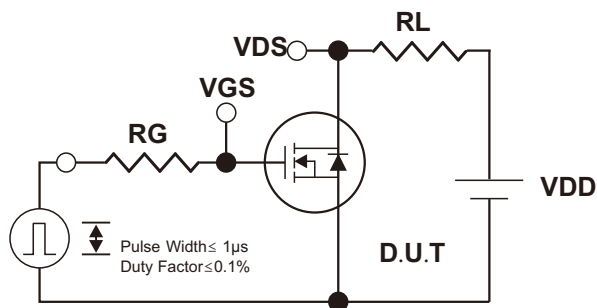


Electrical Characteristics (TA=25°C, unless otherwise specified)

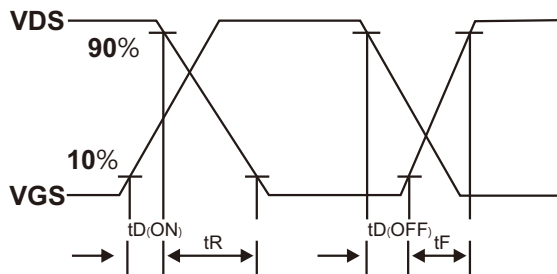
Parameter	Symbols	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1.0	$\mu A$
Gate- Source Leakage Current	Forward	$V_{GS}=12V, V_{DS}=0V$			100	nA
	Reverse	$V_{GS}=-12V, V_{DS}=0V$			-100	
<b>On Characteristics</b>						
Gate Threshold Voltage	$V_{th(GS)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	1.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=4.0A$		15	20	$m\Omega$
		$V_{GS}=2.5V, I_D=3.0A$		19	28	$m\Omega$
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=1.0A, V_{GS}=0V$			1.4	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V,$		888		pF
Output Capacitance	$C_{oss}$	$V_{GS}=0V,$		133		
Reverse Transfer Capacitance	$C_{rss}$	$f=1.0MHz$		117		
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=6.8A$		11.05		nC
Gate-Source Charge	$Q_{gs}$			1.73		
Gate-Drain Charge	$Q_{gd}$			3.1		
Turn-On Delay Time	$t_{D(on)}$	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=6.8A, R_{GEN}=3\Omega$		7		ns
Turn-On Rise Time	$t_r$			46		
Turn-Off Delay Time	$t_{D(off)}$			30		
Turn-Off Fall Time	$t_f$			52		



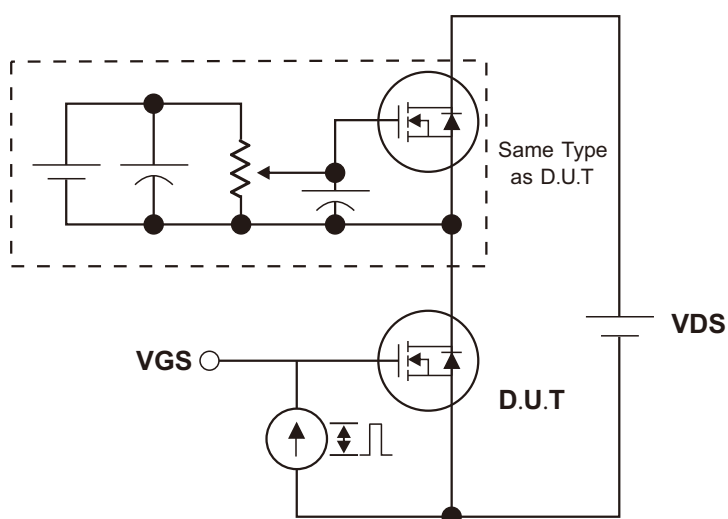
### Test Circuits and waveforms



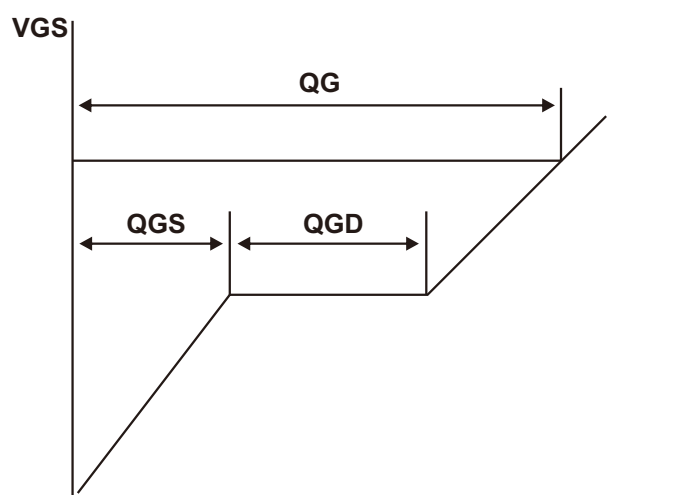
Switching Test Circuit



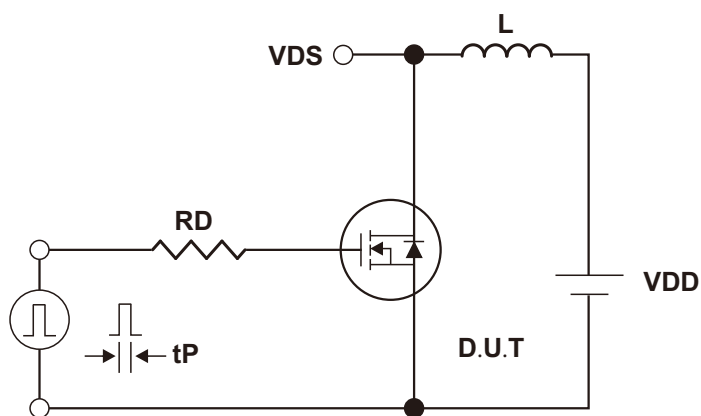
Switching Waveforms



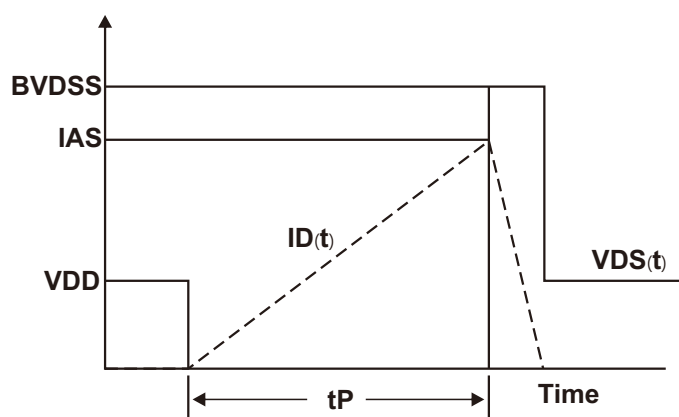
Gate Charge Test Circuit



Charge  
Gate Charge Waveform



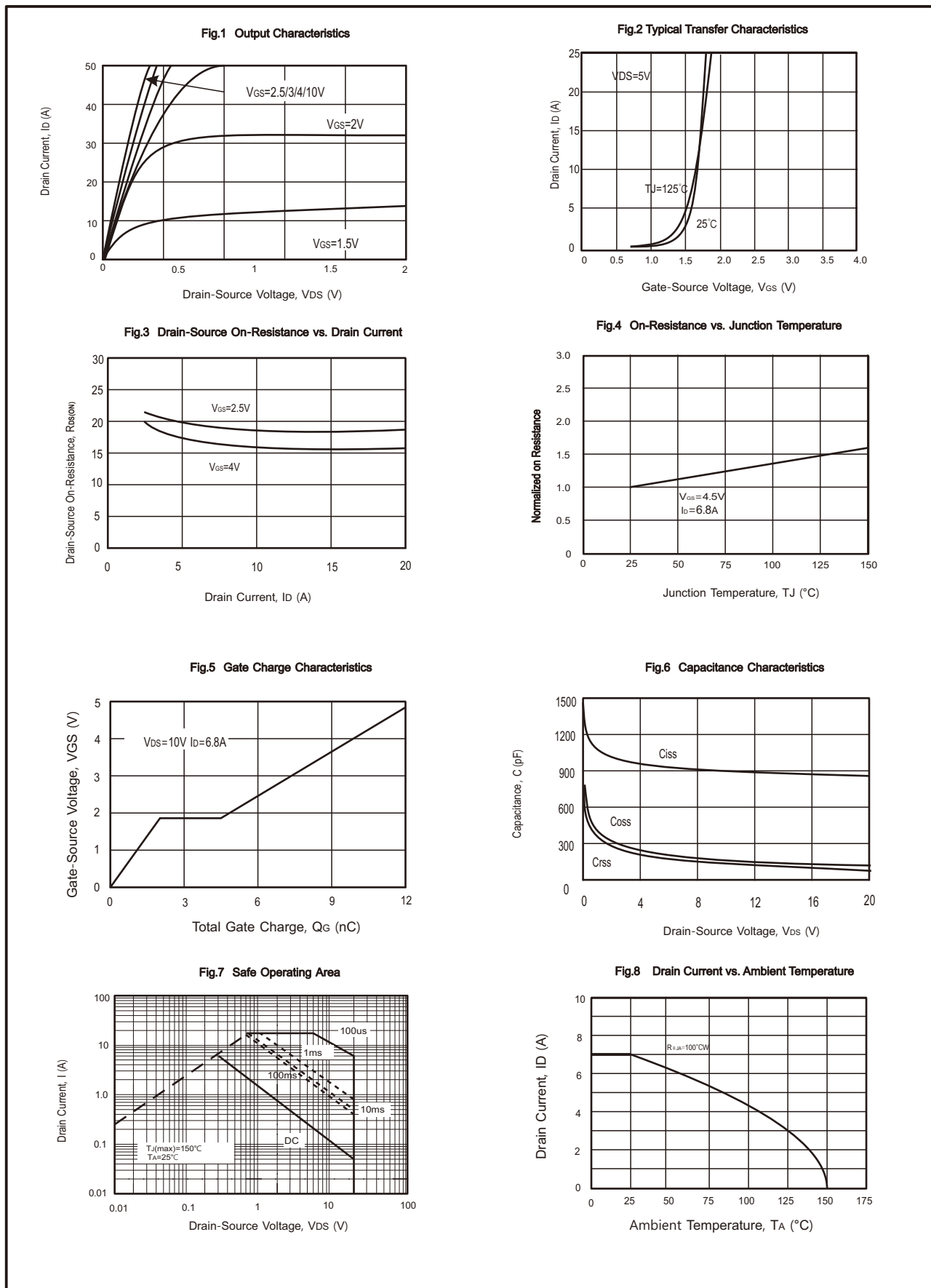
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

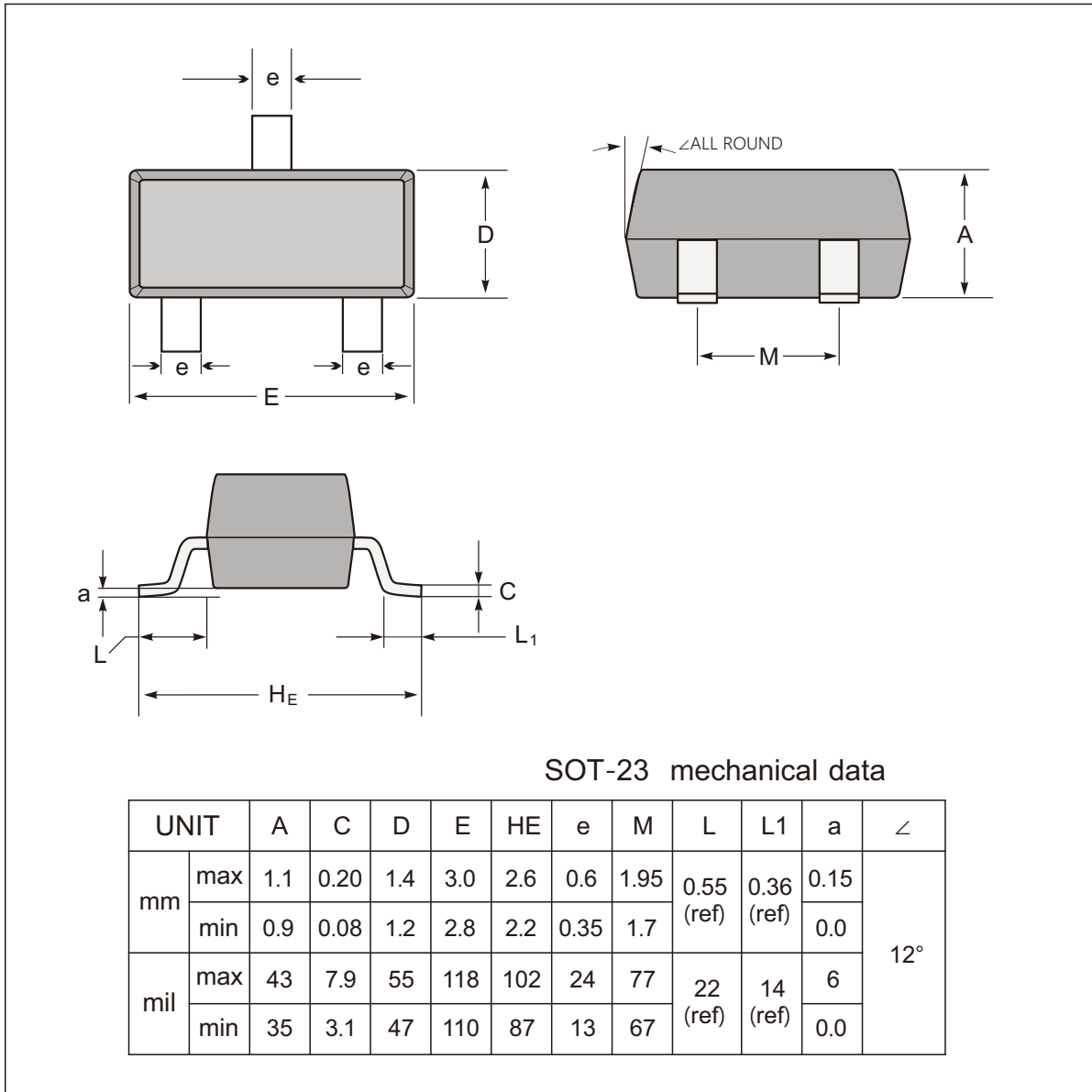


### Typical Characteristics

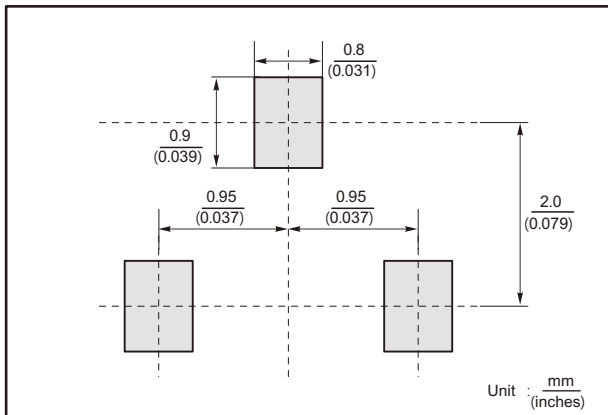




SOT-23 Package Outline Dimensions



The recommended mounting pad size



Marking

Type number	Marking code
NM2312B	2312B



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