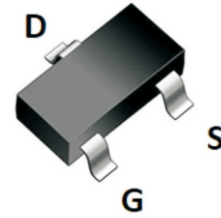




NM3N06
3A, 60V N-CHANNEL MOSFET

SOT-23

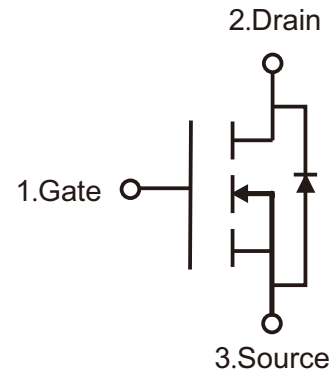


Features

- $V_{DS}=60V, I_D=3A$
- $R_{DS(ON)} \leq 100m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 120m\Omega @ V_{GS}=4.5V$

Application

- Load Switch
- DC/DC Converters



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

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current*AC	I_D	3.0	A
Pulsed Drain Current *B	I_{DM}	12	A
Power Dissipation	P_D	1.25	W
Thermal Resistance,Junction to Case	$R_{\theta JA}$	100	$^{\circ}CW$
Operation Junction Temperature and Storage Temperature	T_j, T_{stg}	-55 ~ +150	$^{\circ}C$



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

Parameter	Symbols	Test Conditions	Min	Typ	Max	Units
On Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate- Source Leakage Current	Forward	$V_{GS} = 20V, V_{DS} = 0V$			100	nA
	Reverse				-100	
Off Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.4	2.0	V
Static Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.0A$		78	100	$m\Omega$
		$V_{GS} = 4.5V, I_D = 3.0A$		84	120	$m\Omega$
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = 3.0A, V_{GS} = 0V$			1.4	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$		560		pF
Output Capacitance	C_{oss}			70		pF
Reverse Transfer Capacitance	C_{rss}			40		pF
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V,$ $I_D = 3A,$		13		nC
Gate-Source Charge	Q_{gs}			1		nC
Gate-Drain Charge	Q_{gd}			4		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 30V, V_{GS} = 10V$ $I_D = 1A, R_{GEN} = 6\Omega$		11		ns
Turn-On Rise Time	t_r			5		ns
Turn-Off Delay Time	$t_{d(off)}$			26		ns
Turn-Off Fall Time	t_f			4		ns

Notes

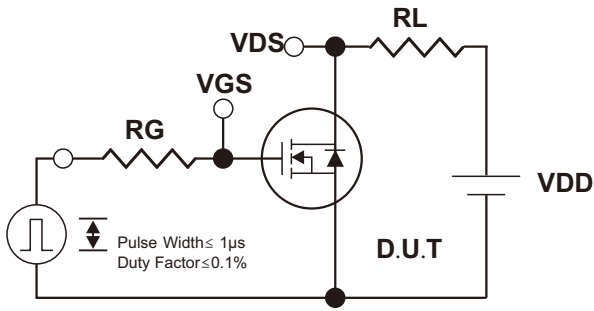
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature.

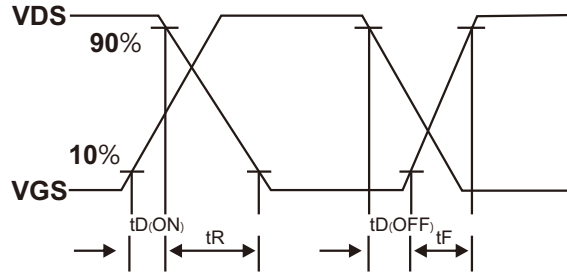
C: The current rating is based on the $t \leq 10s$ junction to ambient thermal resistance rating.



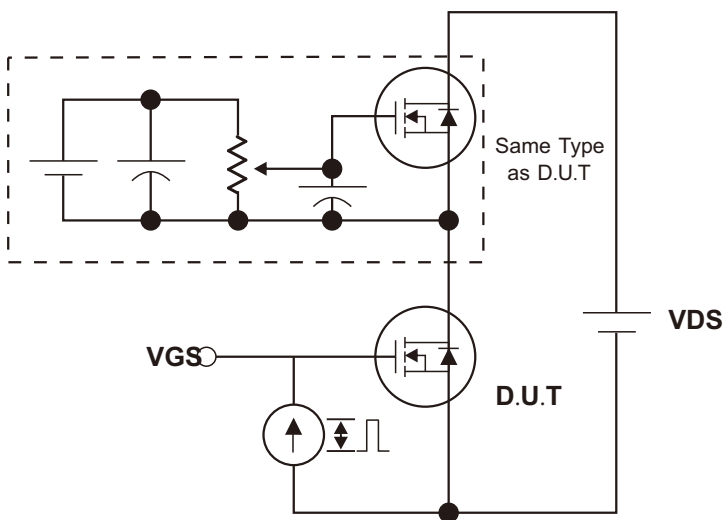
Test Circuits and waveforms



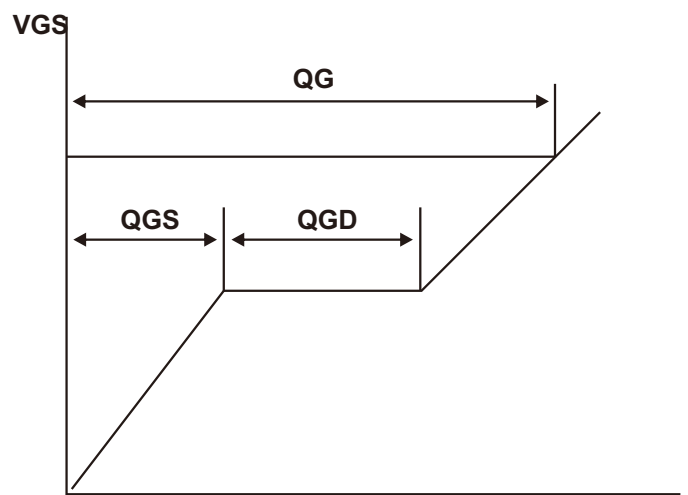
Switching Test Circuit



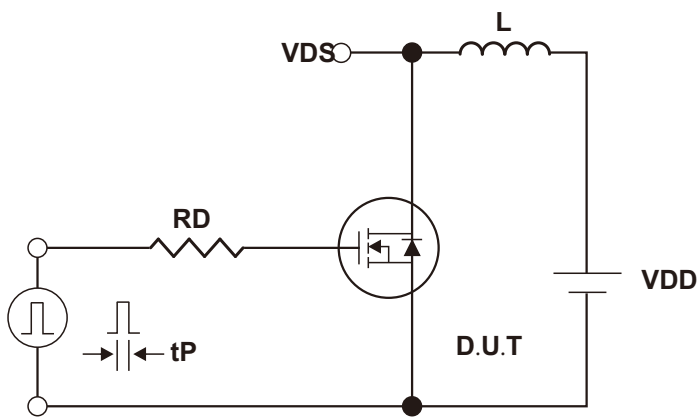
Switching Waveforms



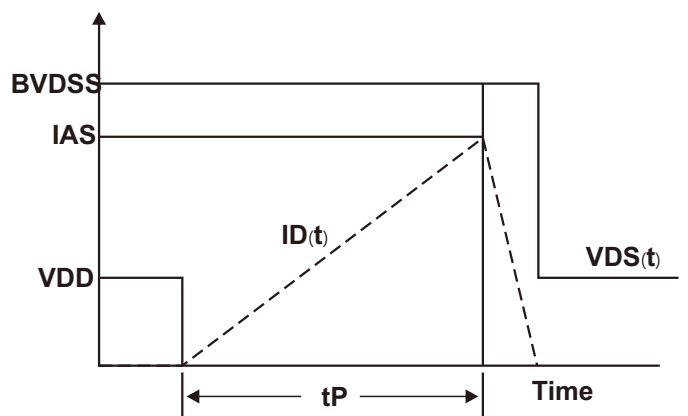
Gate Charge Test Circuit



Charge
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



Typical Characteristics

Fig.1 Output Characteristics

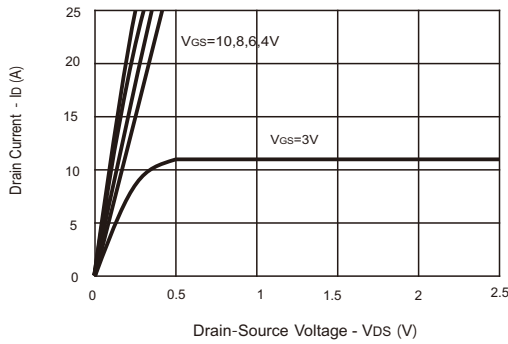


Fig.2 Typical Transfer Characteristics

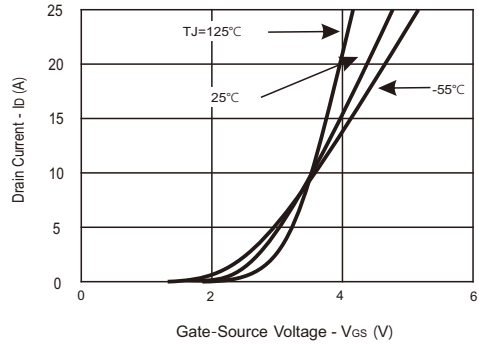


Fig.3 Capacitance Characteristics

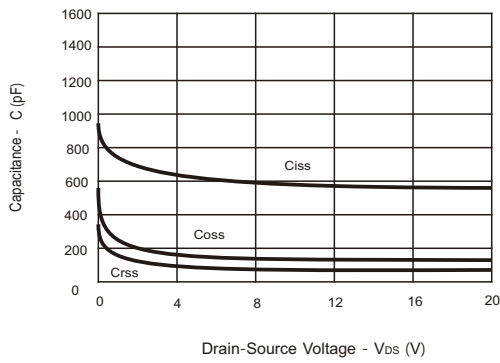


Fig.4 On-Resistance Variation with Temperature

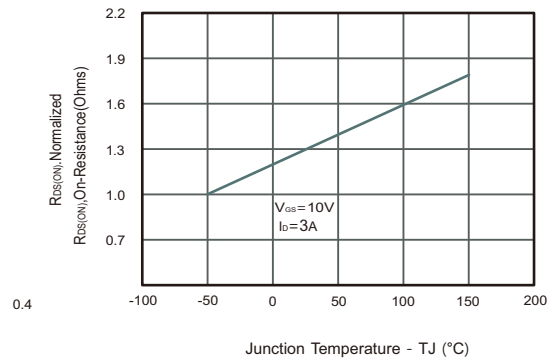


Fig.5 Gate Threshold Variation with Temperature

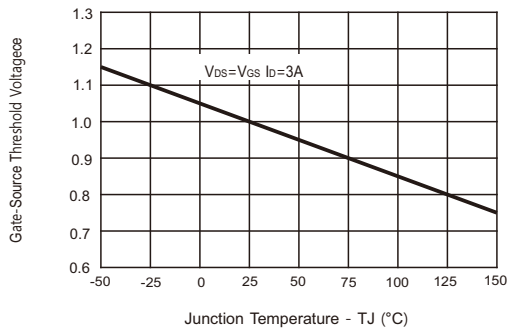


Fig.6 Body Diode Forward Voltage Variation with Source Current

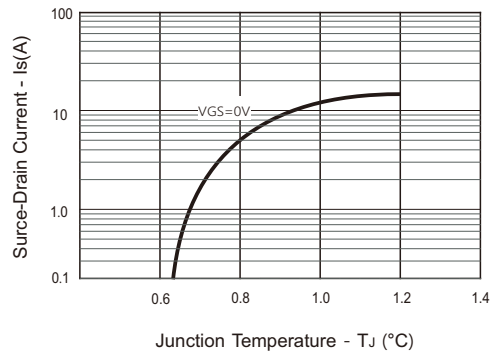


Fig.7 Gate Charge

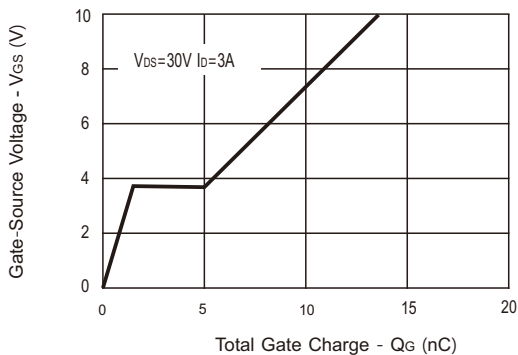
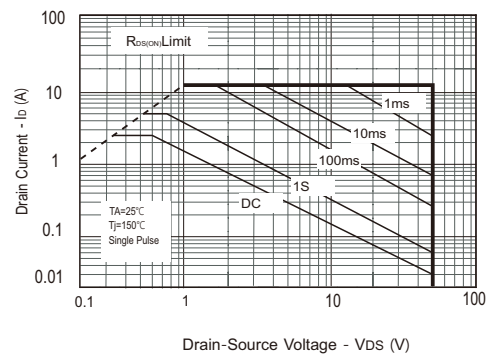
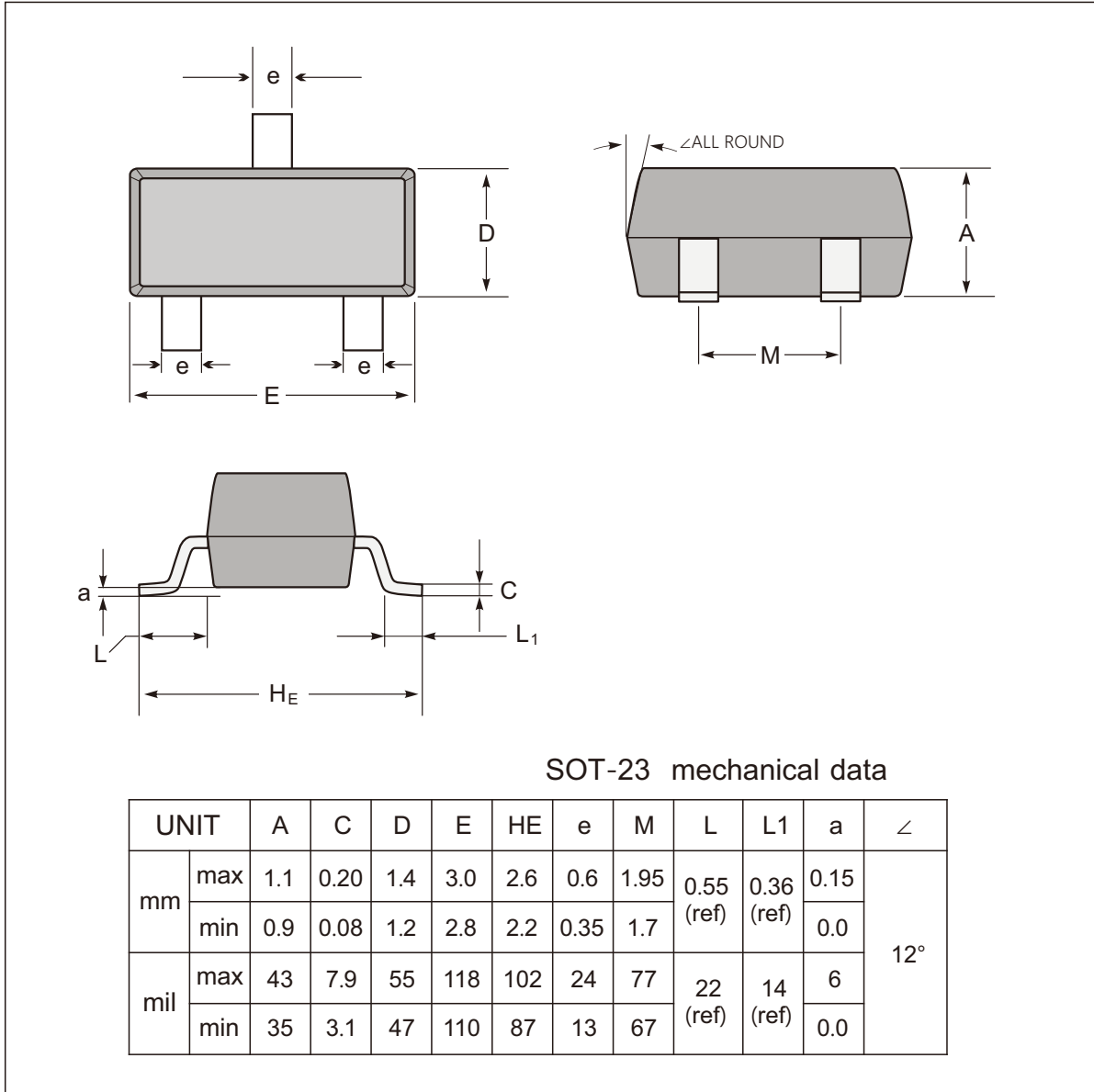


Fig.8 Maximum Safe Operating Area

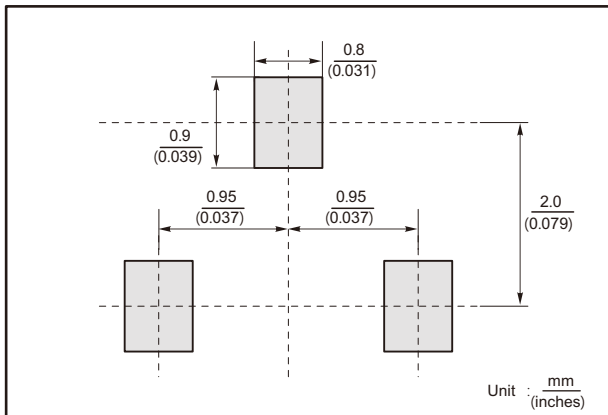




SOT-23 Package Outline Dimensions



The recommended mounting pad size



Marking

Type number	Marking code
NM3N06	3N06



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