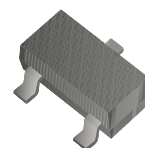


N-Channel MOSFET

RoHS Device
Halogen Free



Features

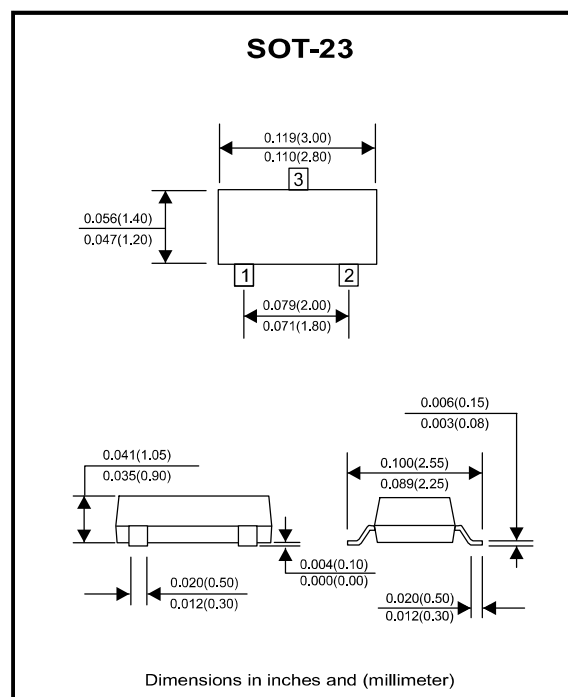
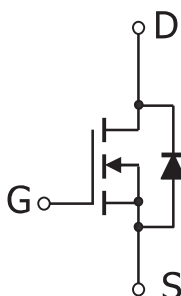
- 100V,3A
- $R_{DS(ON)} = 180m\Omega$ (Typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 210m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
- High Density Cell Design for Ultra Low $R_{DS(ON)}$
- Fully Characterized Avalanche Voltage and Current
- Excellent Package for Good Heat Dissipation

Application

- Uninterruptible Power Supply(UPS)
- Hard Switched and High Frequency Circuits
- Power Switching application

Circuit Diagram

- G : Gate
- S : Source
- D : Drain

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

Symbol	Parameter		Max.			Units
			SOT-23			
V _{DSS}	Drain-Source Voltage		100			V
V _{GSS}	Gate-Source Voltage		±20			V
I _D	Continuous Drain Current	T _C = 25°C	3			A
		T _C = 100°C	2			A
I _{DM}	Pulsed Drain Current ^{note1}		12			A
P _D	Power Dissipation	T _A = 25°C	2.5	3.9	5	W
R _{θJA}	Thermal Resistance, Junction to Ambient		50	32	25	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +150			°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} = 0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V,V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1.0	2.1	3.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =10V, I _D =2A	-	180	310	mΩ
		V _{GS} =4.5V, I _D =1A	-	210	350	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =3A	-	1.1	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} = 0V, f = 1.0MHz	-	190	-	pF
C _{oss}	Output Capacitance		-	22	-	pF
C _{rss}	Reverse Transfer Capacitance		-	13	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =1A, V _{GS} =10V	-	5.2	-	nC
Q _{gs}	Gate-Source Charge		-	0.75	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V,R _L =39Ω, R _G =1Ω, V _{GS} =10V	-	6	-	ns
t _r	Turn-on Rise Time		-	10	-	ns
t _{d(off)}	Turn-off Delay Time		-	10	-	ns
t _f	Turn-off Fall Time		-	6	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Maximum Continuous Drain to Source Diode Forward Current		-	-	3	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _s =1A	-	-	1.2	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

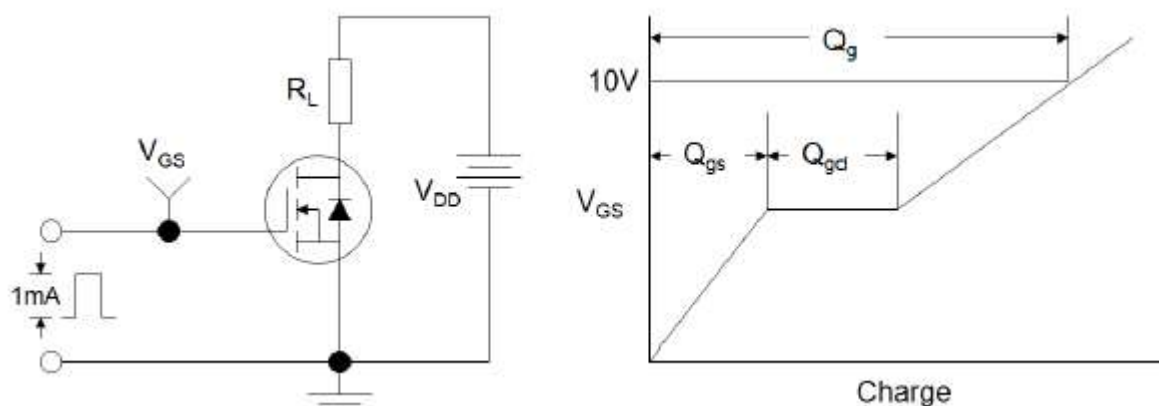


Figure1:Gate Charge Test Circuit & Waveform

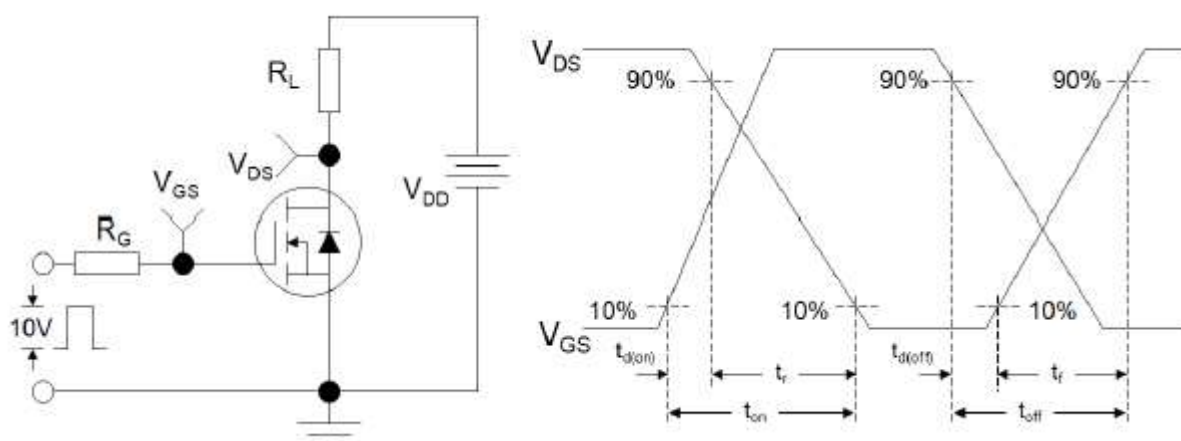


Figure 2: Resistive Switching Test Circuit & Waveforms

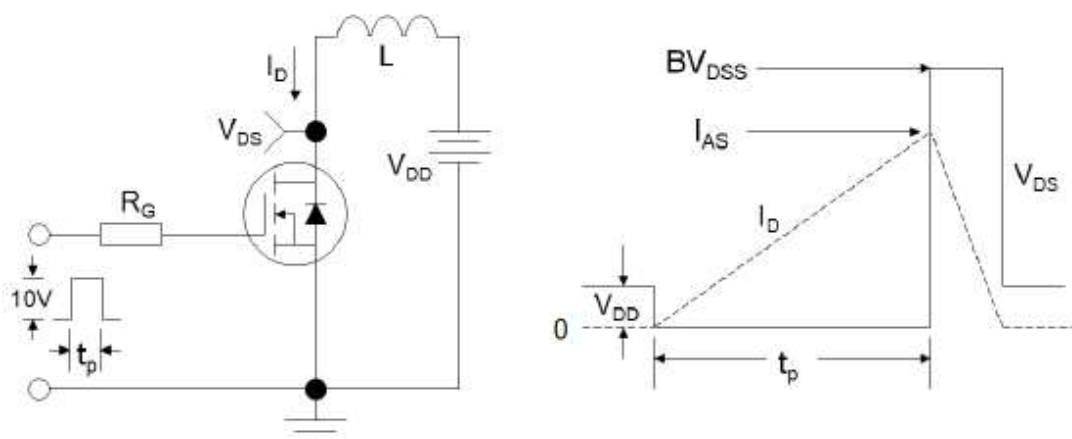


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

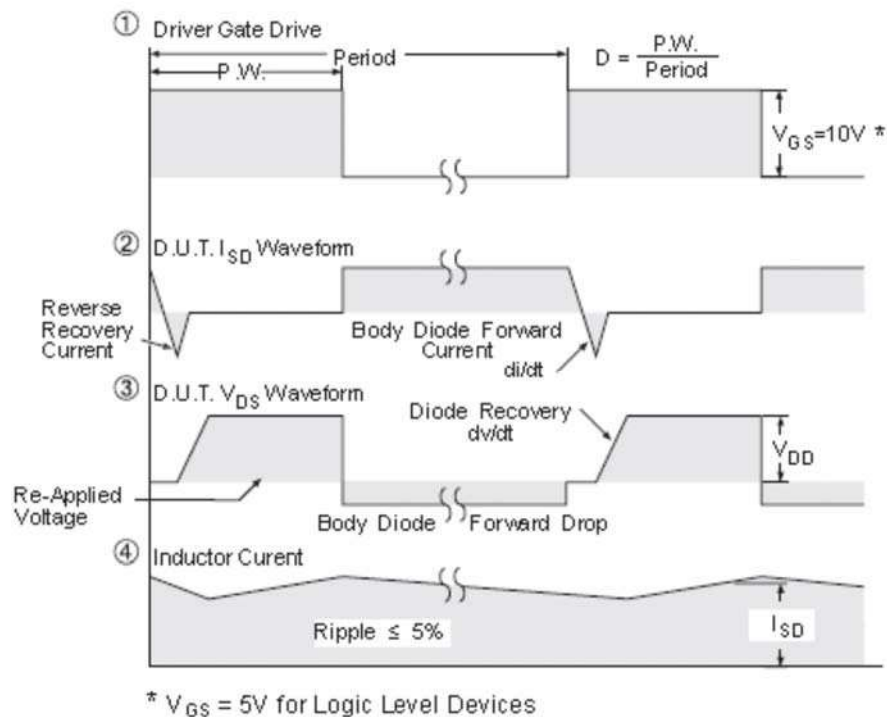
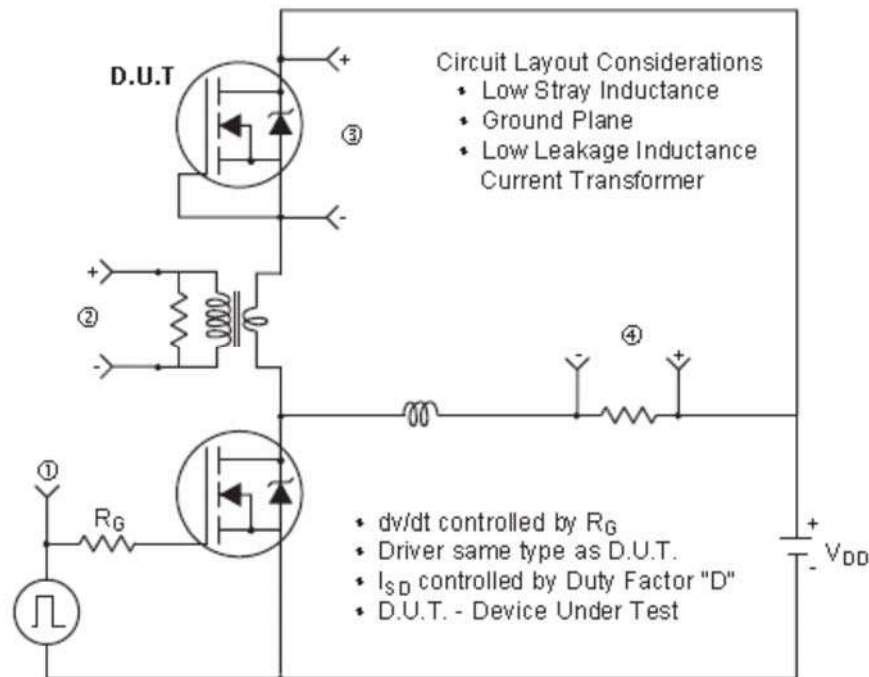
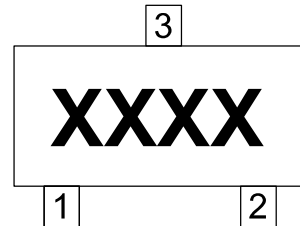


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Marking Code

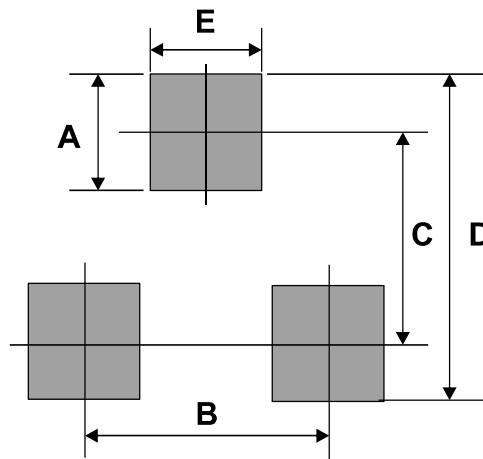
Part Number	Marking Code
LM3N10A	0102



xxxx = Product type marking code

Suggested PAD Layout

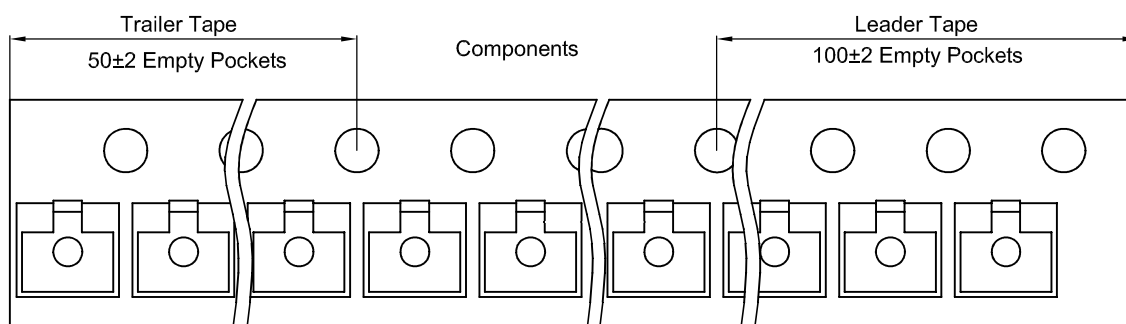
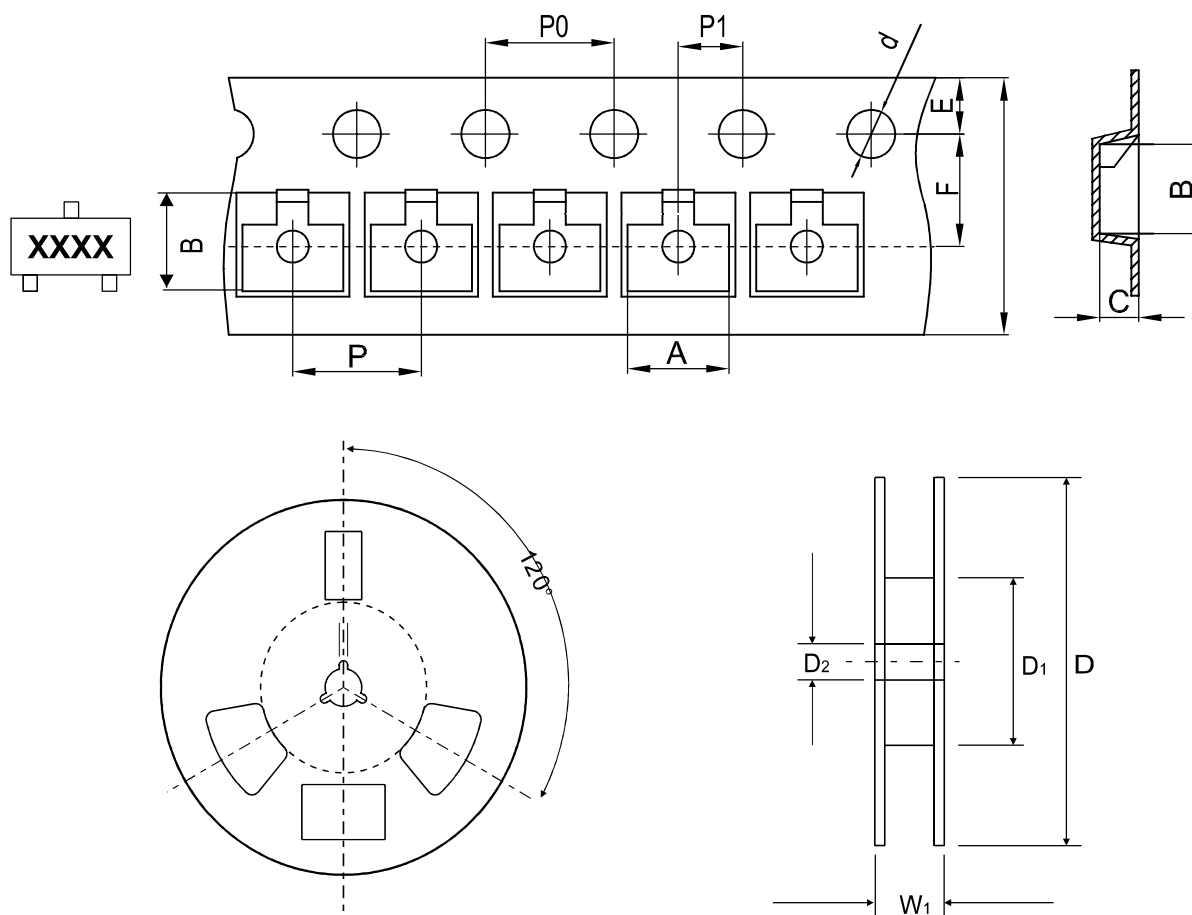
SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	1.90	0.075
C	2.02	0.080
D	2.82	0.111
E	0.60	0.024



Standard Packaging

Case Type	Qty Per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3,000	7

Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 / - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 / - 0.004	0.484 ± 0.039

Company reserves the right to improve product design , functions and reliability without notice.