

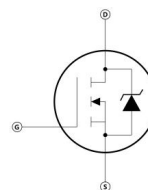
Features

- $V_{DS} = 60V, I = 3A$
 $R_{DS(ON)} < 105m\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 125m\Omega @ V_{GS} = 4.5V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package



Applications

- Battery switch
- DC/DC converter



Electrical ratings

Absolute maximum ratings			
Parameter	Symbol	Value	Unit
Drain-source voltage ($V_{GS} = 0$)	V_{DS}	60	V
Gate- source voltage	V_{GS}	± 20	
Drain current (continuous) at $T_C = 25\text{ }^\circ\text{C}$	I_D	3	A
Drain current (pulsed)	I_{DM}	10	
Total dissipation at $T_C = 25\text{ }^\circ\text{C}$	P_{TOT}	1.7	W
Operating junction temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage temperature	T_{stg}		

Thermal data			
Parameter	Symbol	Value	Unit
Thermal resistance junction-case max	$R_{thj-case}$	0.015	$W/^\circ\text{C}$
Maximum lead temperature for soldering purpose	T_J	300	

Electrical Characteristics (T_{vj} = 25°C unless otherwise specified)

On /off states						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	V _{(BR)DSS}	I _D = 1 mA, V _{GS} = 0	60			V
Zero gate voltage drain current (V _{GS} = 0)	I _{DSS}	V _{DS} = Max rating V _{DS} =Max rating, T _C =125 °C			1	μA
Gate-body leakage current (V _{DS} = 0)	I _{GSS}	V _{GS} = ± 20 V			± 100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	1.3	2.5	V
Static drain-source on resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 3A		78	105	mΩ

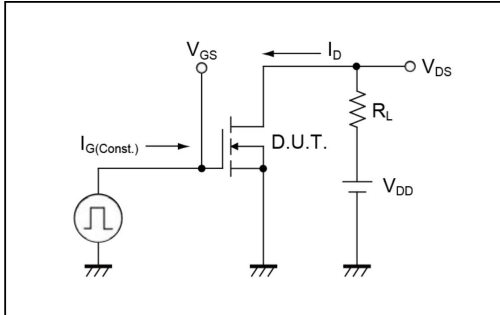
Dynamic						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward transconductance	g _{fs}	V _{DS} = 15 V, I _D = 3		3		S
Input capacitance	C _{iss}	V _{DS} =25V, f=1MHz, V _{GS} =0		247		pF
Output capacitance	C _{oss}			34		
Reverse transfer capacitance	C _{rss}			19		
Total gate charge	Q _g	V _{DD} =30V, I _D =3A V _{GS} =4.5V		6		nC
Gate-source charge	Q _{gs}			1		
Gate-drain charge	Q _{gd}			1		

Source drain diode						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Source-drain current	I _{SD}			3		A
Source-drain current (pulsed)	I _{SDM}			8		
Forward on voltage	V _{SD}	I _{SD} = 3A, V _{GS} = 0		1.2		V

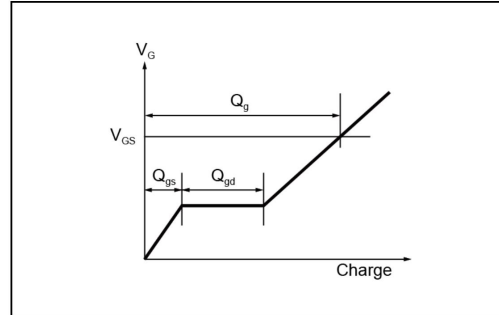
MS3N06FF	SOT-23-3L		
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Electrical characteristics

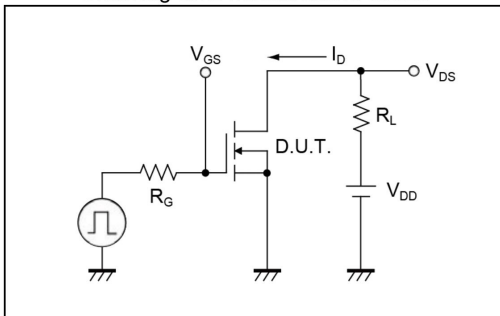
Gate Charge Measurement Circuit



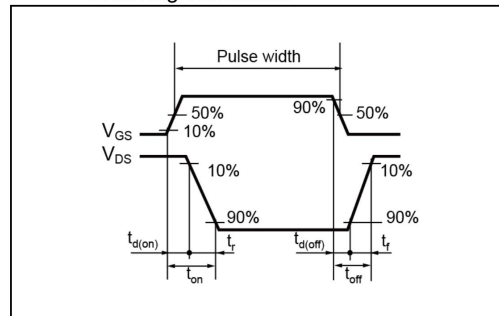
Gate Charge Waveform



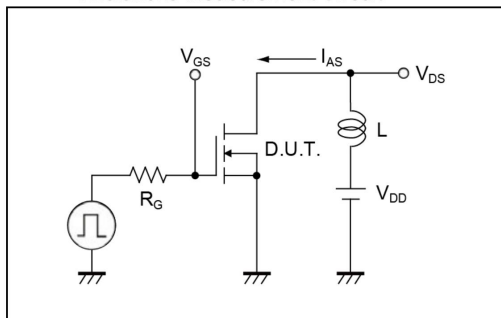
Switching Time Measurement Circuit



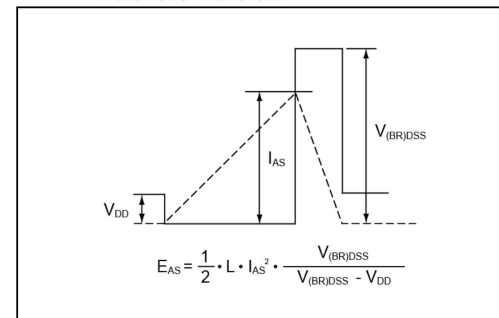
Switching Waveforms

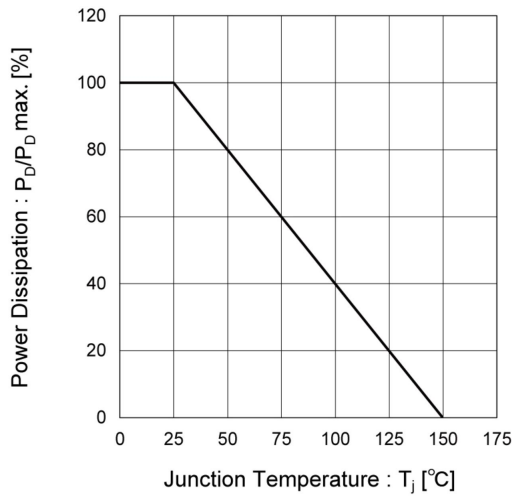
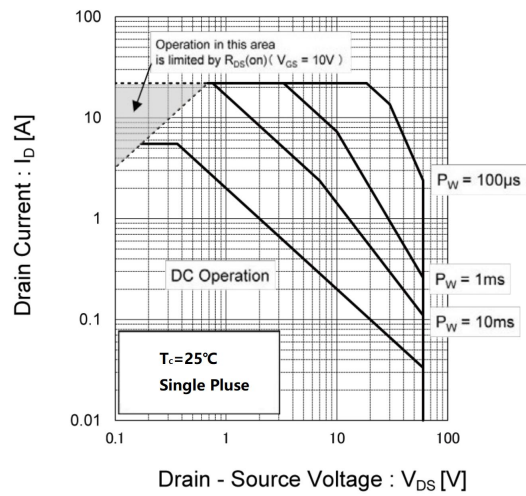
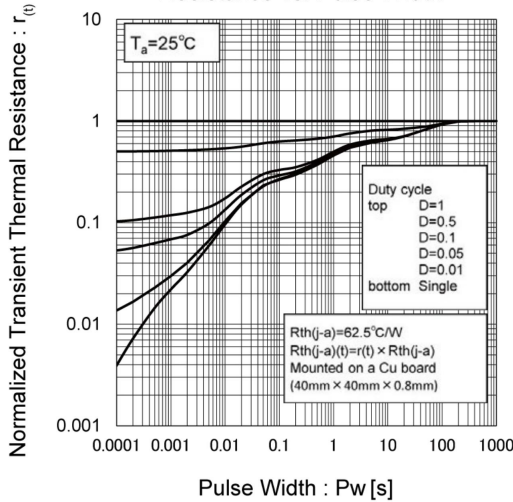
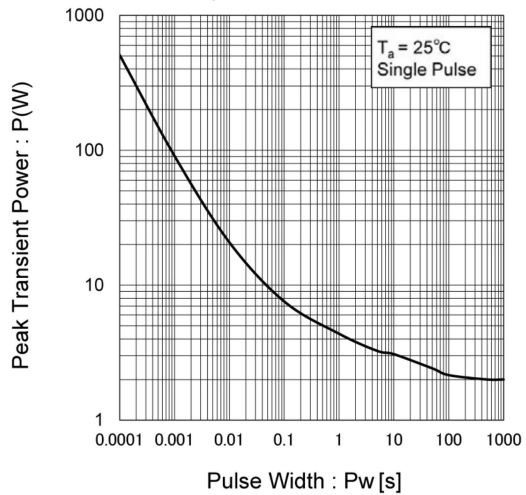
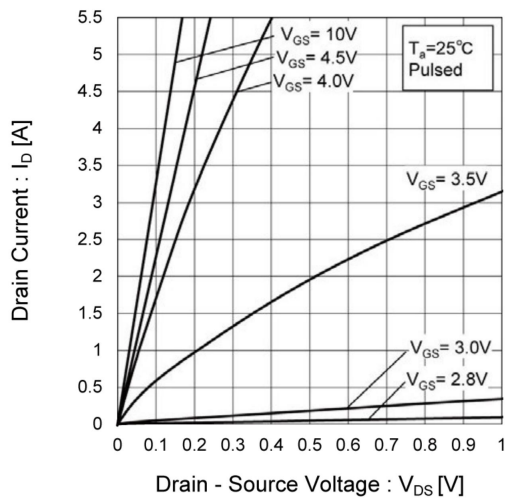
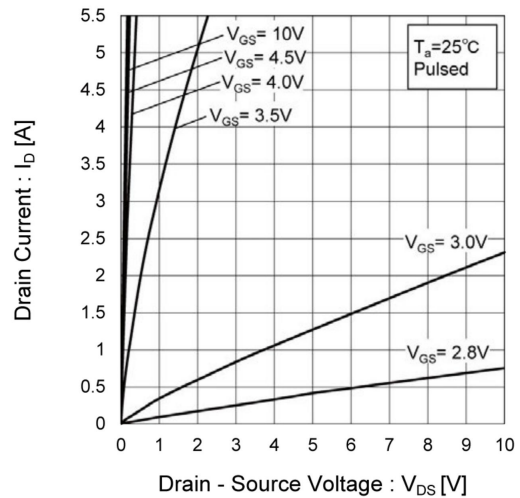


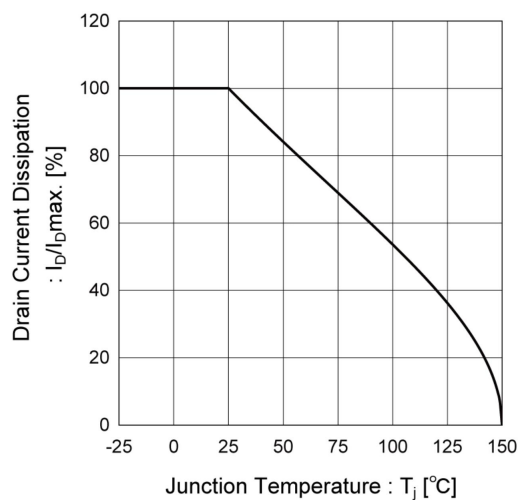
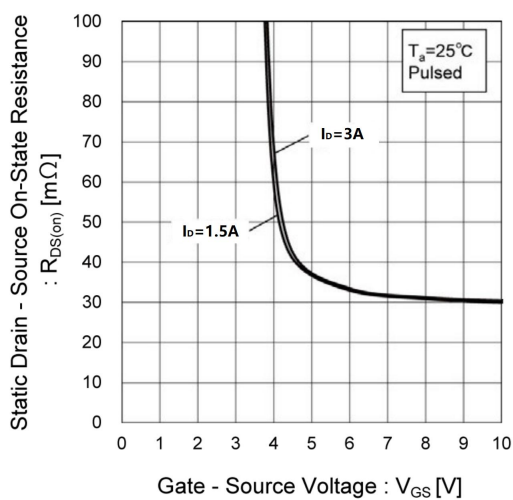
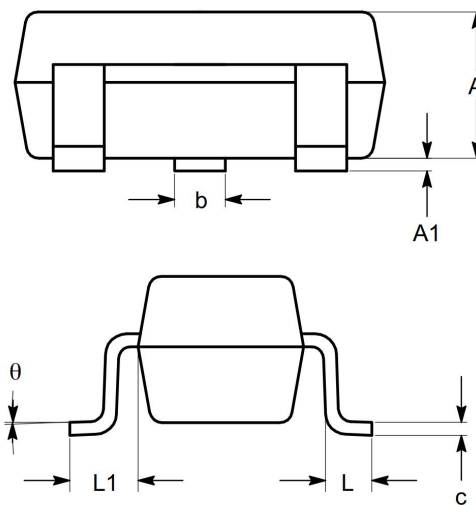
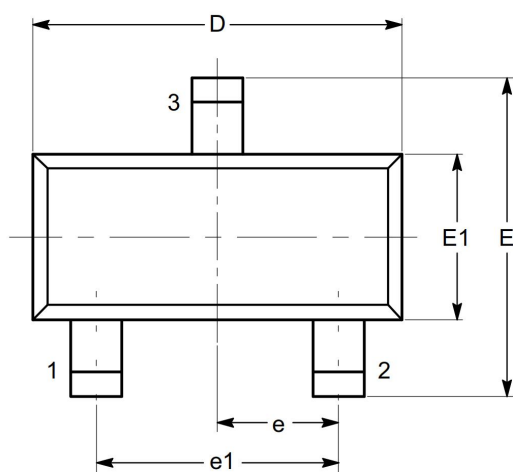
Avalanche Measurement Circuit



Avalanche Waveform



Power Dissipation Derating Curve

Maximum Safe Operating Area

Normalized Transient Thermal Resistance vs. Pulse Width

Single Pulse Maximum Power dissipation

Typical Output Characteristics

Typical Output Characteristics


Drain Current Derating Curve

Static Drain - Source On - State Resistance vs. Gate Source Voltage

Package outline dimension


SYMBOL	MIN	NOM	MAX
A	0.89		1.12
A1	0.013		0.10
b	0.37		0.50
c	0.085		0.18
D	2.80		3.04
E	2.10		2.64

SYMBOL	MIN	NOM	MAX
E1	1.20		1.40
e		0.95 BSC	
e1		1.90 BSC	
L		0.40 REF	
L1		0.54 REF	
θ	0°		8°

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