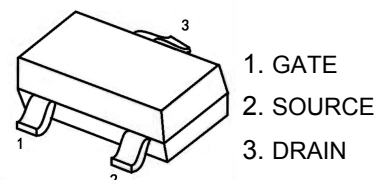


-20V P-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 150m\Omega$ (120m Ω Typ.)
@ $V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 230m\Omega$ (160m Ω Typ.)
@ $V_{GS} = -2.5V$

SOT-23



APPLICATIONS

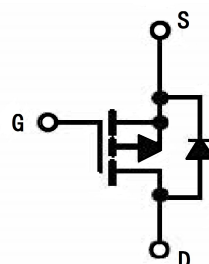
- PWM Applications
- Load Switch
- DC/DC

MARKING



Other mark : "A19T"

P-CHANNEL MOSFET



MAXIMUM RATINGS ($T_a = 25^\circ C$ unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		± 12	V
I_D	Continuous Drain Current	$T_a = 25^\circ C$	-2	A
		$T_a = 100^\circ C$	-1.3	
I_{DM}	Pulsed Drain Current ^{note1}		-8	A
P_D	Power Dissipation	$T_a = 25^\circ C$	0.96	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		130	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

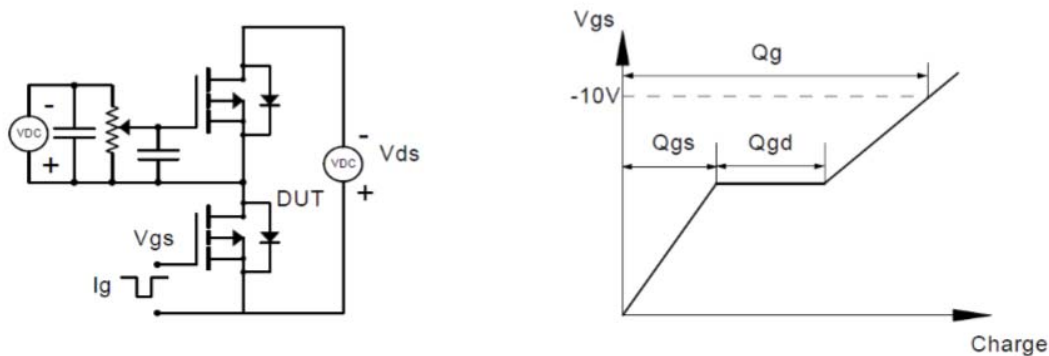
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.7	-1.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =-4.5V, I _D =-2A	-	120	150	mΩ
		V _{GS} =-2.5V, I _D =-1A	-	160	230	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} = 0V, f = 1.0MHz	-	250	-	pF
C _{oss}	Output Capacitance		-	43	-	pF
C _{rss}	Reverse Transfer Capacitance		-	24	-	pF
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -2A, V _{GS} = -4.5V	-	2.3	-	nC
Q _{gs}	Gate-Source Charge		-	0.41	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	0.62	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -10V, R _L =5Ω R _{GEN} =3Ω, V _{GS} =-4.5V	-	10.2	-	ns
t _r	Turn-on Rise Time		-	5.3	-	ns
t _{d(off)}	Turn-off Delay Time		-	20.8	-	ns
t _f	Turn-off Fall Time		-	8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-2	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-8	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -2A	-	-	-1.2	V

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

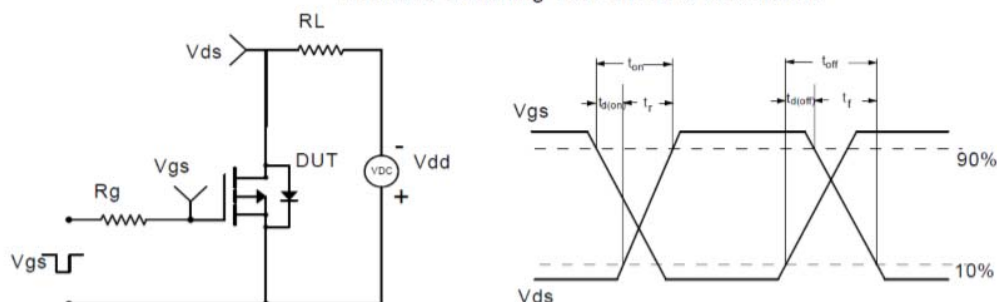
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

TYPICAL PERFORMANCE CHARACTERISTICS

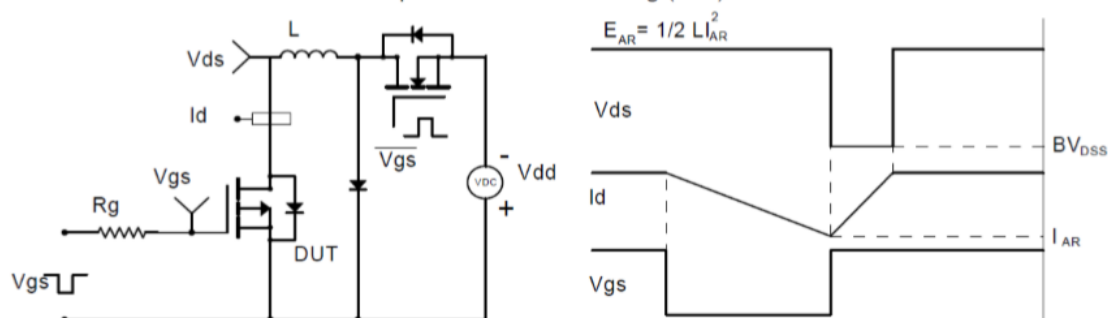
Gate Charge Test Circuit & Waveform



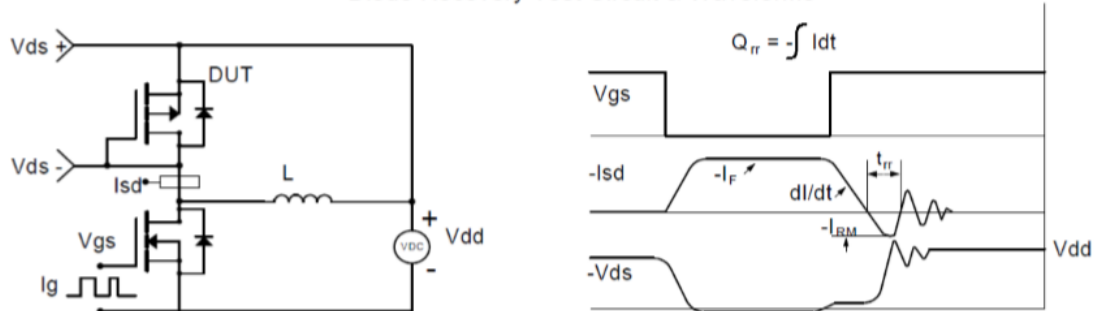
Resistive Switching Test Circuit & Waveforms



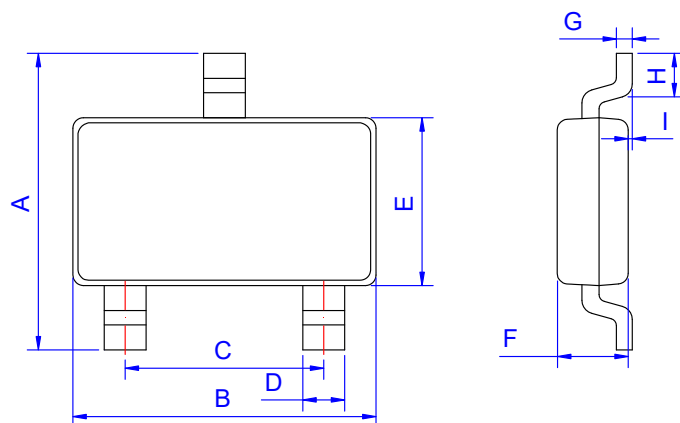
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



SOT-23 PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004