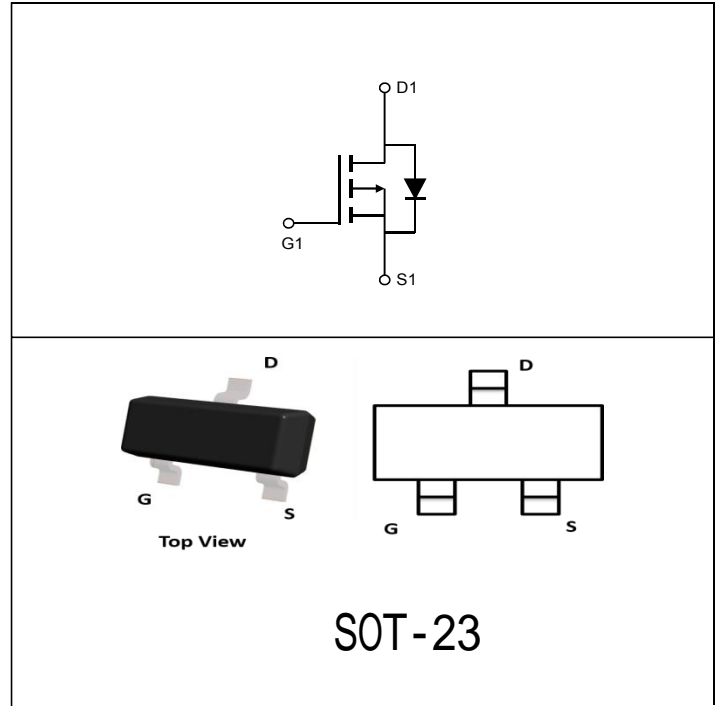


Product Summary

- -20V, -12A
 $R_{DS(ON)} < 21m\Omega @ V_{GS} = 4.5V$
 $R_{DS(ON)} < 28m\Omega @ V_{GS} = 2.5V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired



GENERAL FEATURES

- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed switching

Application

- Battery protection
- Load switch
- Power management

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A=25^\circ C$ Steady State	I_D	-12	A
	$T_A=70^\circ C$ Steady State		-7.8	
Pulsed Drain Current ^A		I_{DM}	-30	A
Total Power Dissipation @ $T_A=25^\circ C$ Steady State		P_D	1.5	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	65	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V, T _C =25°C			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.4	-0.7	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D = -4 A		16	21	mΩ
		V _{GS} = -2.5V, I _D = -3 A		20	28	
Diode Forward Voltage	V _{SD}	I _S =-12A, V _{GS} =0V		-0.8	-1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ		2010		pF
Output Capacitance	C _{oss}			200		
Reverse Transfer Capacitance	C _{rss}			200		
Switching Parameters						
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-4A		15.3		nC
Gate Source Charge	Q _{gs}			2.2		
Gate Drain Charge	Q _{gd}			4.4		
Turn-on Delay Time	t _{D(on)}	V _{DD} =-10V V _{GS} =-4.5V R _{GEN} =2.5Ω I _D =-4A		10		ns
Turn-on Rise Time	t _r			31		
Turn-off Delay Time	t _{D(off)}			28		
Turn-off Fall Time	t _f			8		

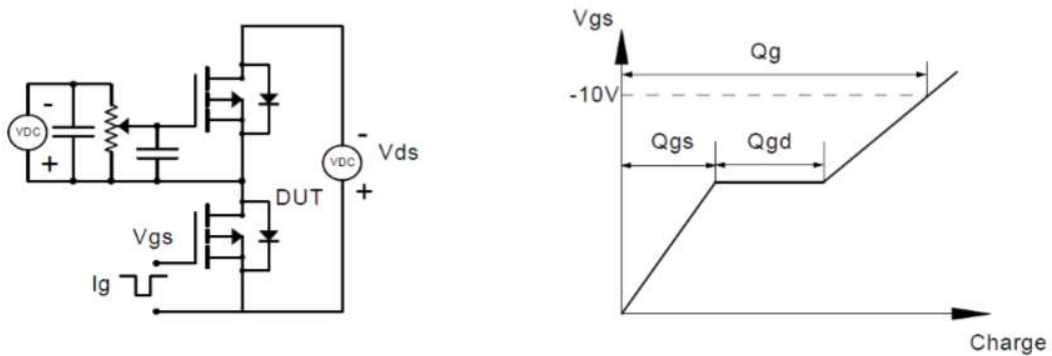
A. Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

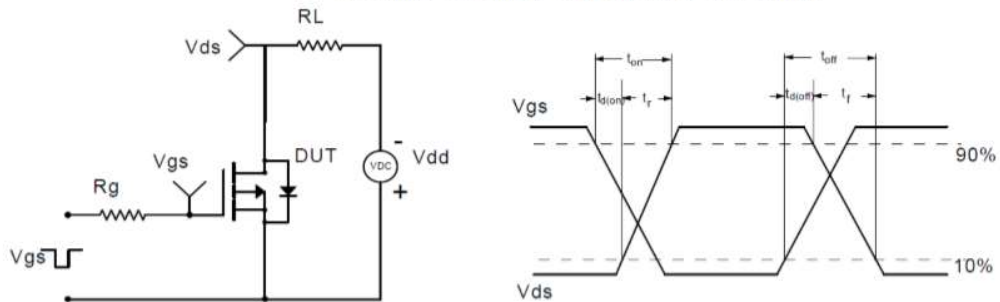
Typical Performance Characteristics

Test Circuit

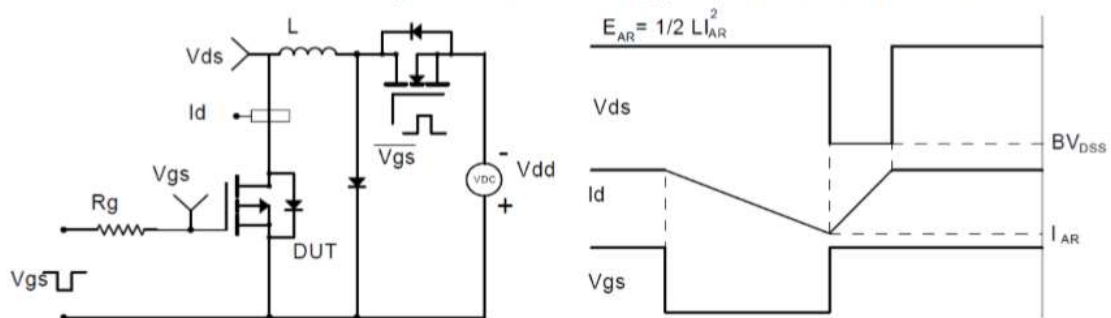
Gate Charge Test Circuit & Waveform



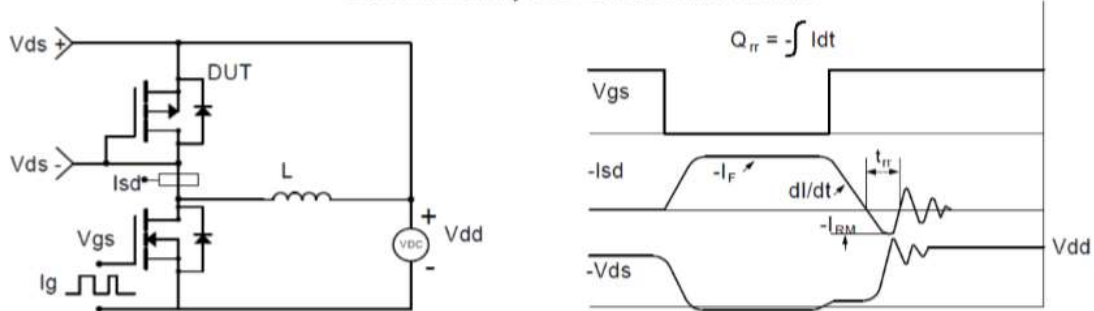
Resistive Switching Test Circuit & Waveforms



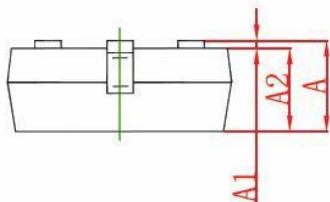
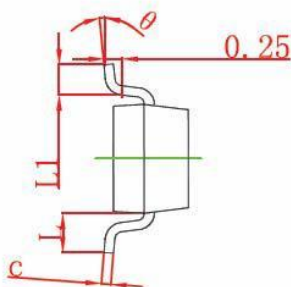
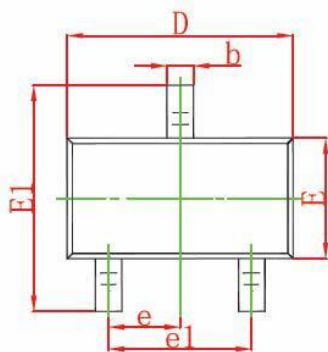
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°