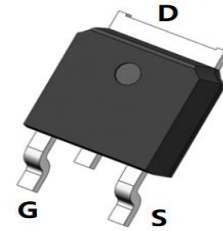


Features

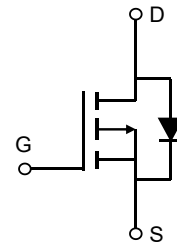
- -20V, -120A
 $R_{DS(ON)}$ Typ = 2.1m Ω @ $V_{GS} = -4.5V$
 $R_{DS(ON)}$ Typ = 3.0m Ω @ $V_{GS} = -2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge



TO-252-3L

Application

- Load Switch
- PWM Application
- Power Management



Absolute Maximum Ratings (@ $T_J = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	-20	V	
V _{GS}	Gate-to-Source Voltage	±12	V	
I _D	Continuous Drain Current	T _C = 25°C	-120	A
		T _C = 100°C	-54	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	-360	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	100	mJ	
P _D	Power Dissipation	T _C = 25°C	52.5	W
R _{θJC}	Thermal Resistance, Junction to Case	2.38	°C/W	
T _J , T _{STG}	Junction & Storage Temperature Range	-55 to 150	°C	

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
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Off Characteristics

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$	-	-	-1.0	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 12\text{V}$	-	-	± 100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-0.4	-0.65	-0.95	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance ⁽³⁾	$V_{GS} = -4.5\text{V}$, $I_D = -15\text{A}$	-	2.1	3.5	$\text{m}\Omega$
		$V_{GS} = -2.5\text{V}$, $I_D = -10\text{A}$	-	3.0	4.5	$\text{m}\Omega$

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$, $V_{DS} = -10\text{V}$, $f = 1\text{MHz}$	-	9799	-	pF
C_{oss}	Output Capacitance		-	1310	-	pF
C_{rss}	Reverse Transfer Capacitance		-	867	-	pF
Q_g	Total Gate Charge	$V_{GS} = 0 \text{ to } -4.5\text{V}$ $V_{DS} = -10\text{V}$, $I_D = -15\text{A}$	-	100	-	nC
Q_{gs}	Gate Source Charge		-	15	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	28	-	nC

Switching Characteristics

$t_{d(on)}$	Turn-On DelayTime	$V_{GS} = -10\text{V}$, $V_{DD} = -10\text{V}$ $I_D = -13\text{A}$, $R_{GEN} = 2.7\Omega$	-	19	-	ns
t_r	Turn-On Rise Time		-	198	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	282	-	ns
t_f	Turn-Off Fall Time		-	288	-	ns

Drain-Source Diode Characteristics and Max Ratings

I _S	Maximum Continuous Drain to Source Diode Forward Current	-	-	-120	A	
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current	-	-	-360	A	
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -15A		-	-1.2	V

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = -10\text{V}$, $V_G = -10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = -20\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

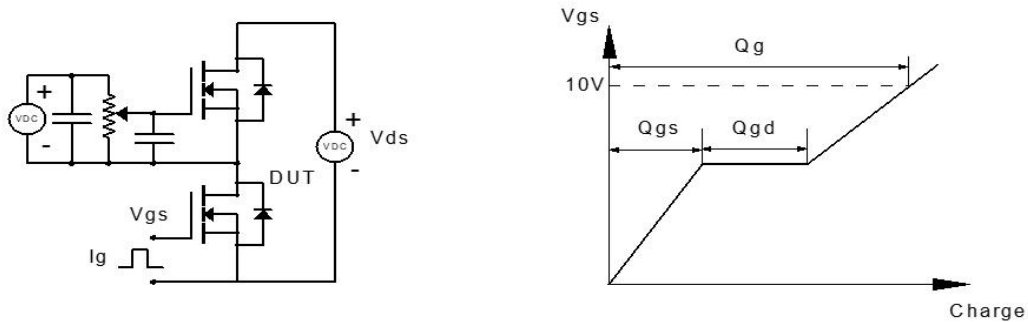


Figure 1: Gate Charge Test Circuit & Waveform

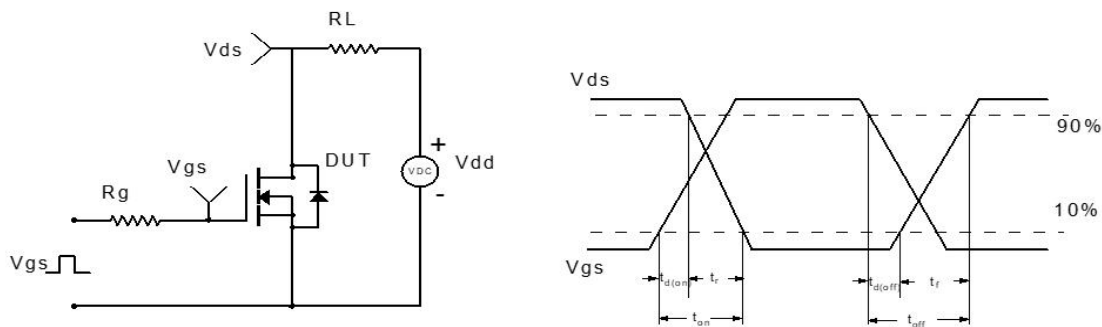


Figure 2: Resistive Switching Test Circuit & Waveform

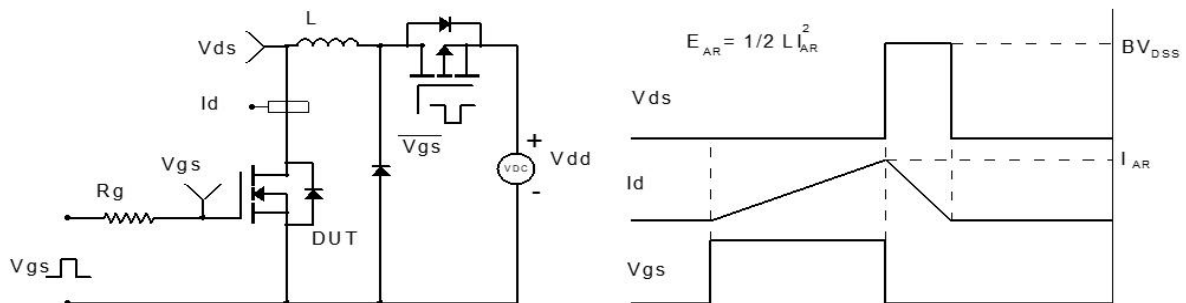


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

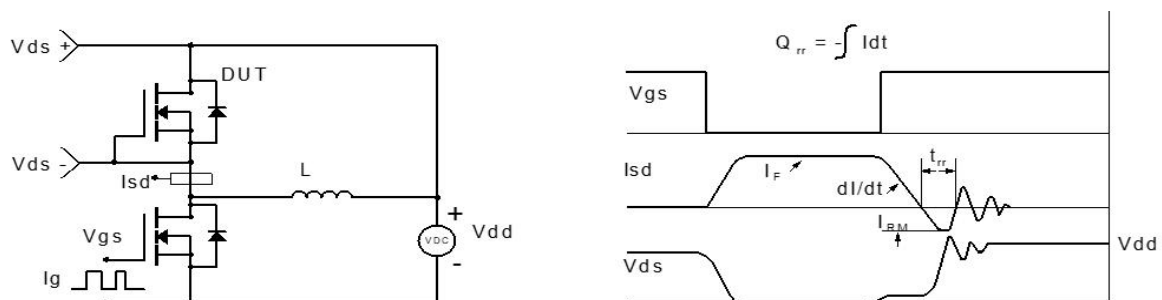
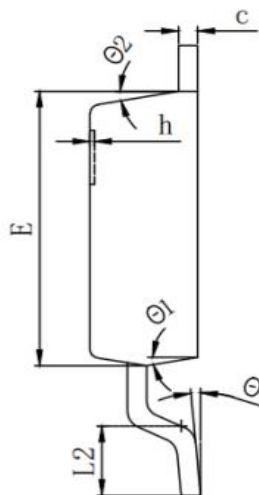
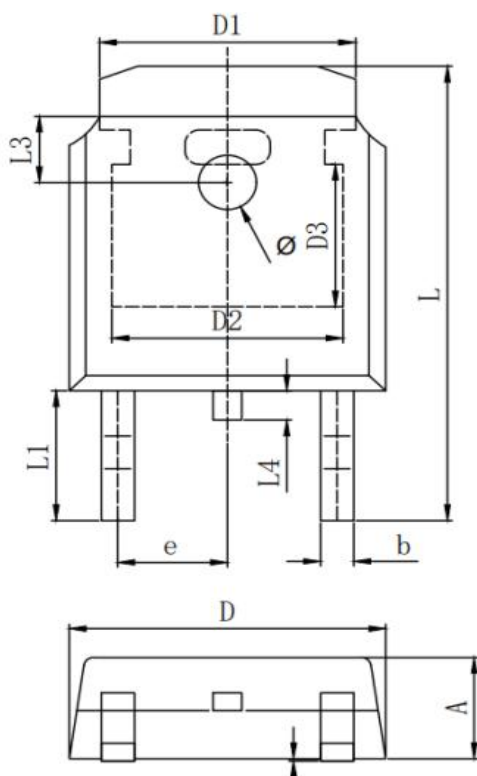


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-252-3L)



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		