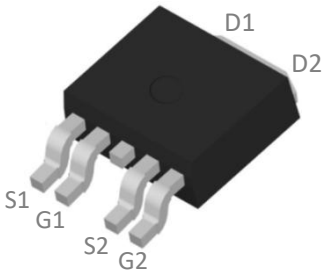
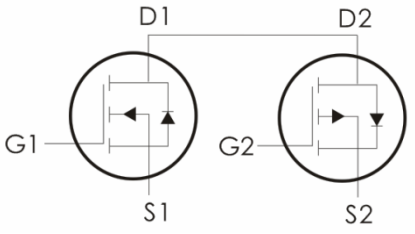
Description：

This N+P Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.





Features：

N-Channel:V_{DS}=30V,I_D=40A,$R_{DS(ON)}$<10mΩ @V_{GS}=10V（Typ：7.5mΩ）

P-Channel: V_{DS}=-30V,I_D=-25A,$R_{DS(ON)}$<25mΩ @V_{GS}=-10V（Typ：19mΩ）

1) Low gate charge.
2) Green device available.
3) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
4) Excellent package for good heat dissipation.
5) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DOD617S	D617S	TO- 252-4	2500 pcs/Reel

Absolute Maximum Ratings：（T_C=25℃ unless otherwise noted）

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Continuous Drain Current- T_C=25℃[1]	40	-25	A
	Continuous Drain Current-T_C=100℃[1]	28	-17.5	
I_{DM}	Pulsed Drain Current [2]	160	-100	A
E_{AS}	Single pulse avalanche energy[3]	31	31	mJ
P_D	Power Dissipation - T_C=25℃	23	23	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		℃

Thermal Characteristics：

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Cast	5.4	5.5	℃/W

N-Channel Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=20A	---	7.5	10	mΩ
		V_{GS}=4.5V,I_D=10A	---	11	17	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	800	---	pF
C_{oss}	Output Capacitance		---	119	--	
C_{rss}	Reverse Transfer Capacitance63		---	95	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, I_D=15A, R_{ENG}=3.3Ω,V_{GS}=10V	---	4	---	ns
t_r	Rise T8e		---	7	---	ns
$t_{d(off)}$	Turn-Off Delay T39e		---	30	---	ns
t_f	Fall T16ime		---	3	---	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=15A	---	9.8	---	nC
Q_{gs}	Gate-Source Charge		---	4	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	3.5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_G=0V, I_{SD}=1A	---	---	1	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	40	A
I_{SM}	Pulsed Drain Current		---	---	160	A

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=15V,V_G=10V,L=0.5mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Test Circuit

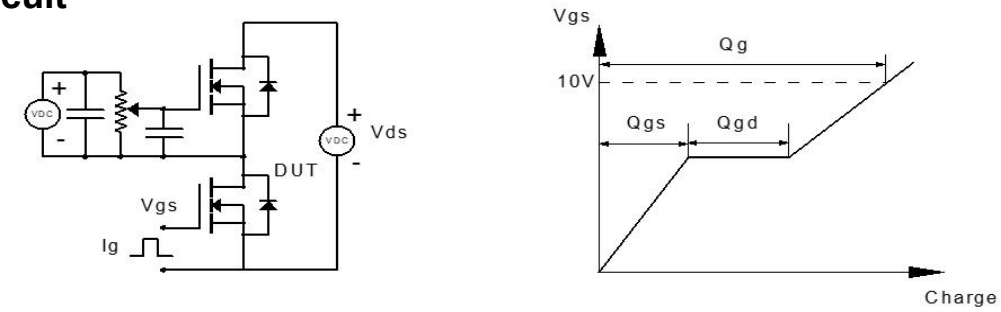


Figure 1: Gate Charge Test Circuit & Waveform

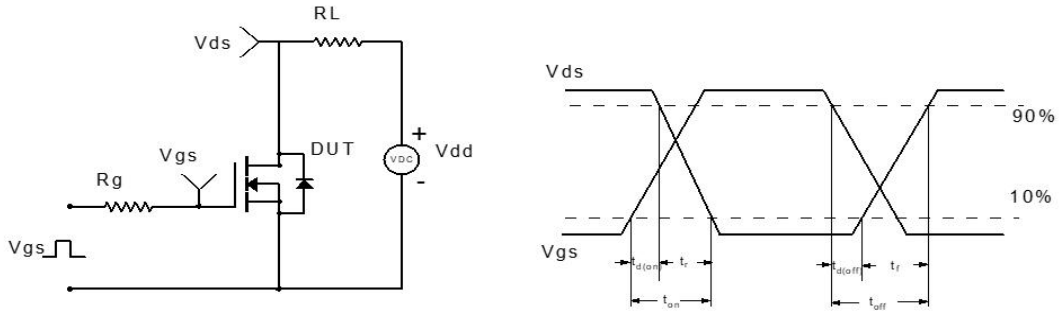


Figure 2: Resistive Switching Test Circuit & Waveform

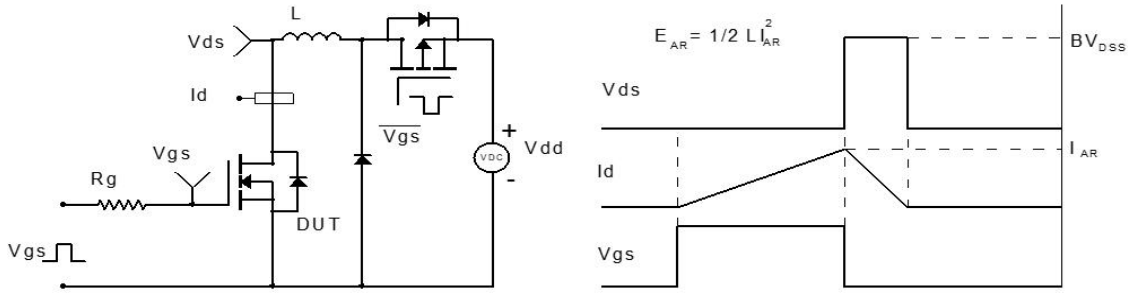


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

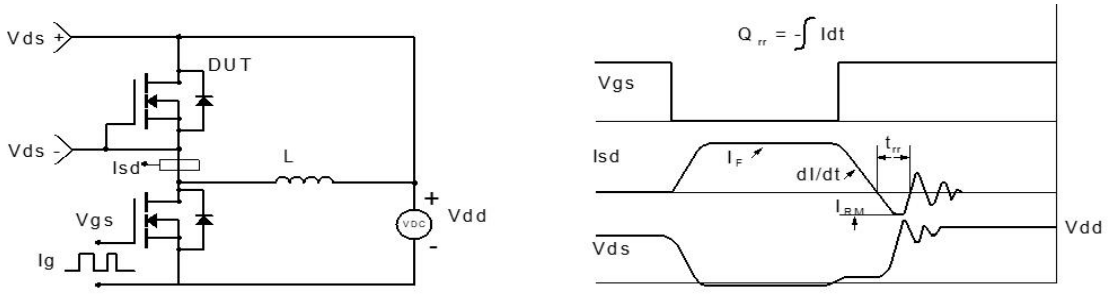


Figure 4: Diode Recovery Test Circuit & Waveform

P-Channel Electrical Characteristics: (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-30V	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1	-1.5	-2	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=-10V,I_D=-10A	---	19	25	mΩ
		V_{GS}=-4.5V,I_D=-5A	---	27	40	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	1000	---	pF
C_{oss}	Output Capacitance		---	140	---	
C_{rss}	Reverse Transfer Capacitance		---	130	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}= -15V， I_D=-1A V_{GS}= -10V, R_{GEN}=6Ω	---	12	---	ns
t_r	Rise Time		---	14	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	195	---	ns
t_f	Fall Time		---	95	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V,V_{DS}=-15V, I_D=-8A	---	50	---	nC
Q_{gs}	Gate-Source Charge		---	.9.5	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	8.1	---	nC
Drain-Source Diode Characteristics						
I_S	Continuous Drain to Source Diode	V_D=V_G=0V	---	---	-20.8	A
I_{SM}	Pulsed Drain to Source Diode		---	---	-83.3	A
Trr	Reverse Recovery Time	I_F=-2A,T_J=25℃ dI/dt=100A/us	---	23	---	ns
Qrr	Reverse Recovery Charge		---	14	---	nc
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-12A	---	---	-1.2	V

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=-15V,V_G=-10V,L=0.5mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Test Circuit

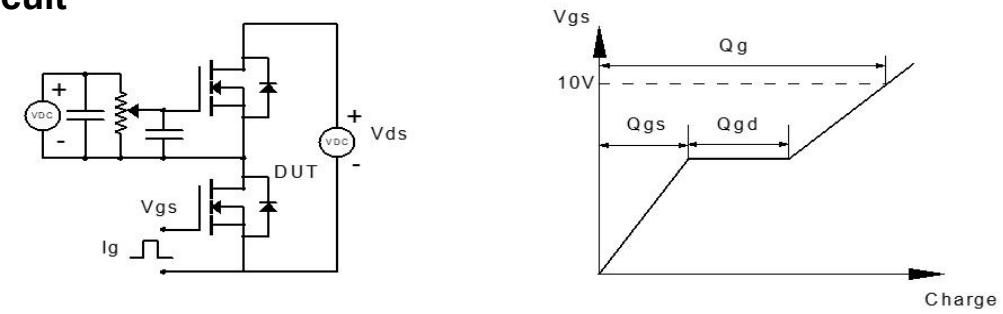


Figure 1: Gate Charge Test Circuit & Waveform

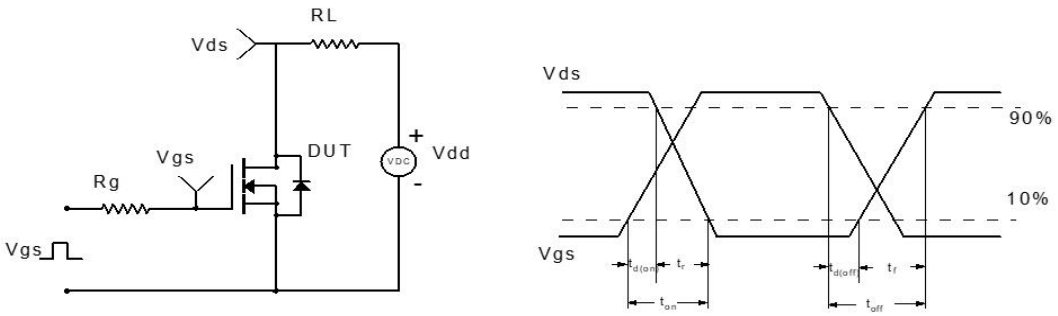


Figure 2: Resistive Switching Test Circuit & Waveform

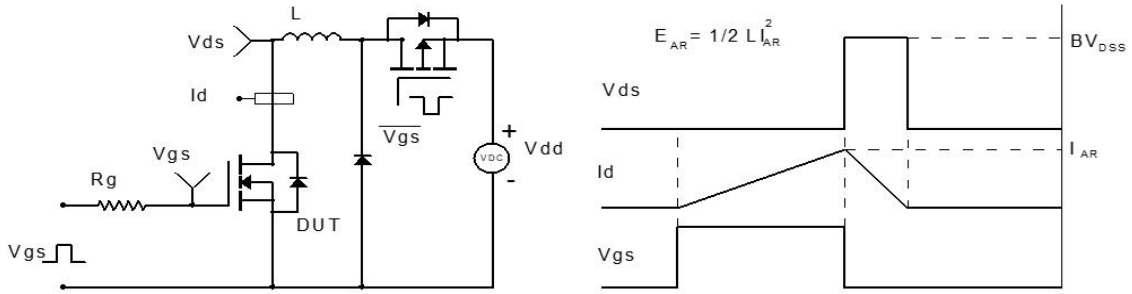


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

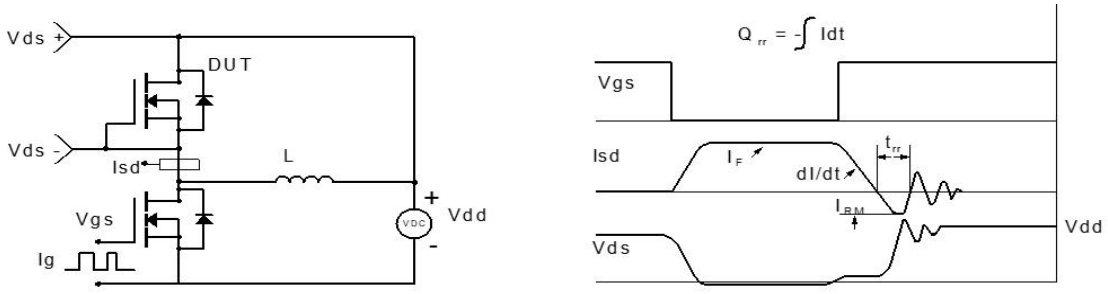
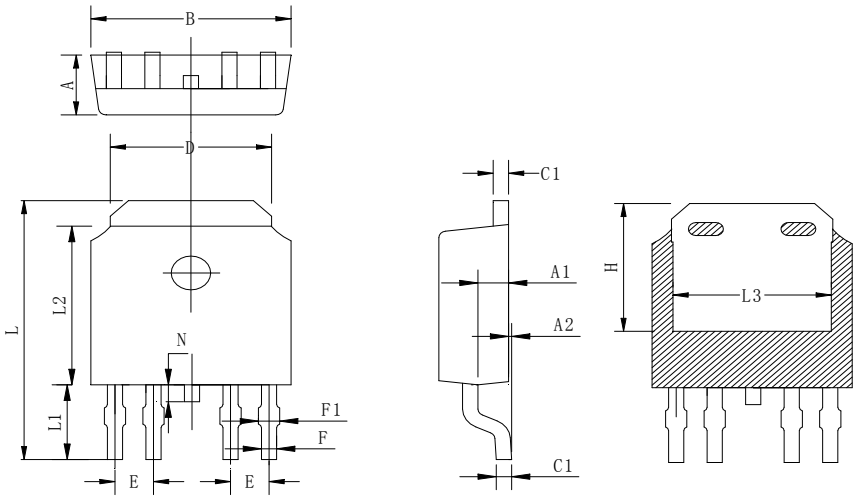


Figure 4: Diode Recovery Test Circuit & Waveform

TO-252-4 Package Outline Data

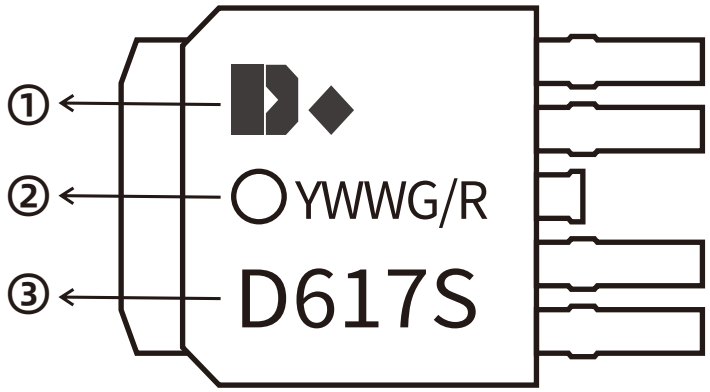
UNIT: mm



Symbol	Min	Typ	Max
A	2.20	2.30	2.40
A1	0.91	1.01	1.11
A2	0.05	0.15	0.25
B	6.45	6.60	6.75
C	0.45	0.50	0.58
C1	0.45	0.50	0.58
D	5.12	5.32	5.52
E		1.27 TYP	
F1	0.45	0.60	0.75
F	0.40	0.50	0.60
H	4.70	4.90	5.10
L	9.70	10.00	10.20
L1	2.6	2.8	3.0
L2	5.95	6.10	6.25
L3	5.00	5.20	5.40`
N	0.45	0.65	0.85

Marking Information：

①: Doingter LOGO
②: Date Code（YWWG / R）
Y: Year Code , last digit of the year
WW : Week Code（01-53）
G/R: G(Green) /R(Lead Free)
③: Part NO.



Previous Version

Version	Date	Subjects (major changes since last revision)
2.0	2025-09-16	Release of final version

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