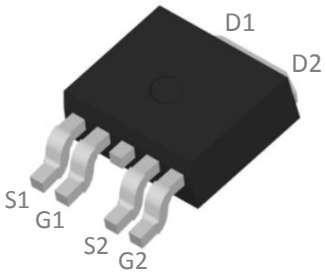
Description：

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.

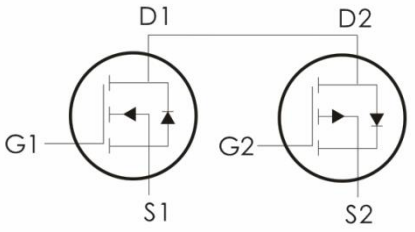


Features：

N-Channel:V_{DS}=40V,I_D=25A,$R_{DS(ON)}$<20m Ω @V_{GS}=10V

P-Channel: V_{DS}=-40V,I_D=-25A,$R_{DS(ON)}$<26m Ω @V_{GS}=-10V

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.



Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DOD619B	D619B	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	40	-40	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Continuous Drain Current- T_C=25℃	25	-25	A
	Continuous Drain Current-T_C=100℃	18	-18	
I_{DM}	Pulsed Drain Current [1]	100	-100	A
E_{AS}	Single Pulsed Avalanche Energy [2]	130	156	mJ
P_D	Power Dissipation	40	40	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		℃

Thermal Characteristics：

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Case	3.12	3.12	℃/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	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=40V	---	---	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	V_{GS}=10V,I_D=4A	---	14	20	mΩ
		V_{GS}=4.5V,I_D=3A	---	20	26	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	---	979	---	pF
C_{oss}	Output Capacitance		---	96	---	
C_{rss}	Reverse Transfer Capacitance		---	67.5	---	
Q_g	Gate Charge	V_{GS}=8V V_{DS}=20V I_D=5A	---	10	---	nc
Q_{gs}	Gate-Source Charge		---	1.8	---	
Q_{gd}	Gate-Drain Charge		---	2.2	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V,R_L=1Ω R_{REN}=3Ω,V_{GS}=10V	---	10	---	ns
t_r	Rise Time		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	35	---	ns
t_f	Fall Time		---	8	---	ns
Drain-Source Diode Characteristics						
I_S	Continuous Drain Current	V_D=V_G=0V	---	---	25	A
I_{SM}	Pulsed Drain Current	V_D=V_G=0V	---	---	100	A
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=8A	---	---	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics: (T_C=25℃ unless otherwise noted)

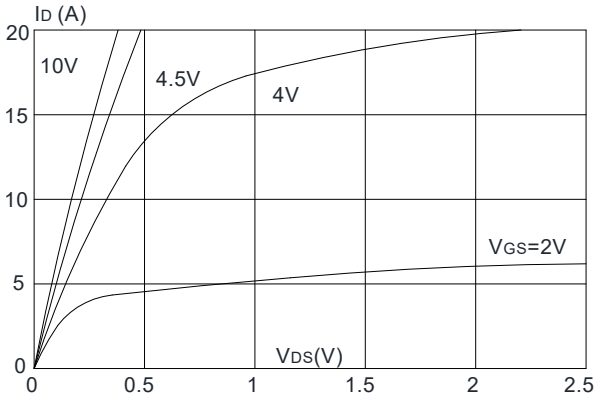


Figure1: Output Characteristics

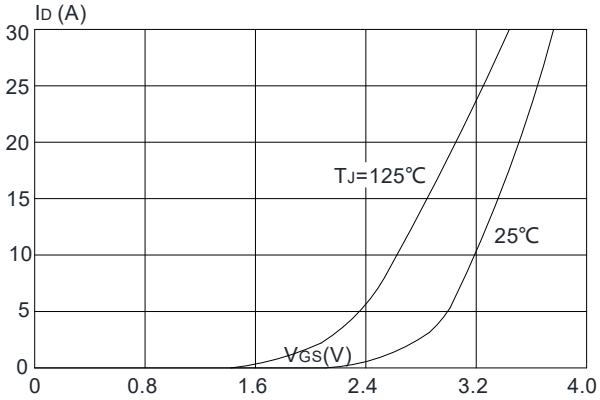


Figure 2: Typical Transfer Characteristics

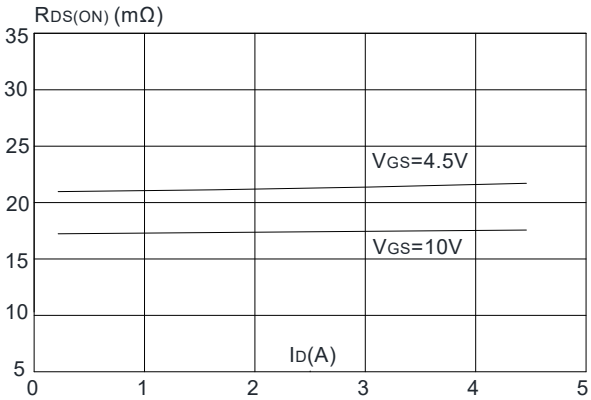


Figure 3: On-resistance vs. Drain Current

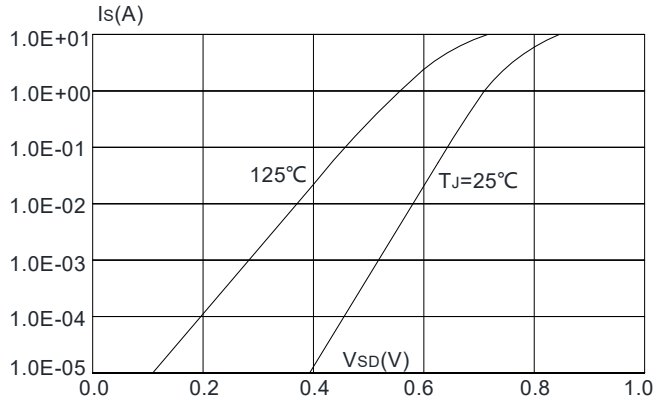


Figure 4: Body Diode Characteristics

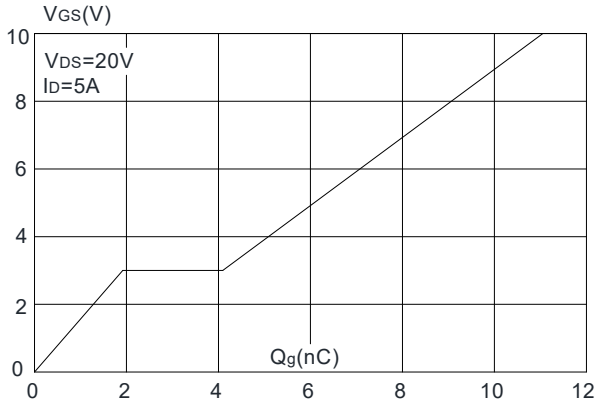


Figure 5: Gate Charge Characteristics

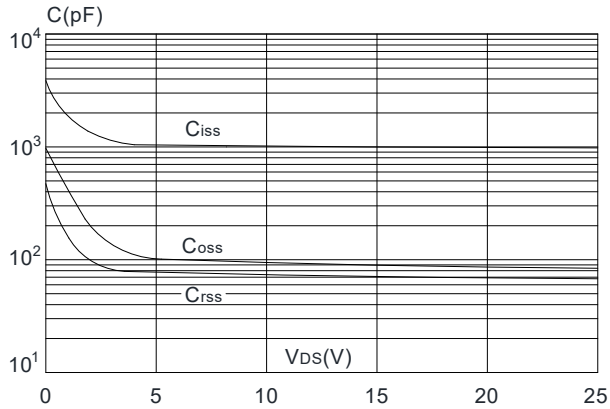


Figure 6: Capacitance Characteristics

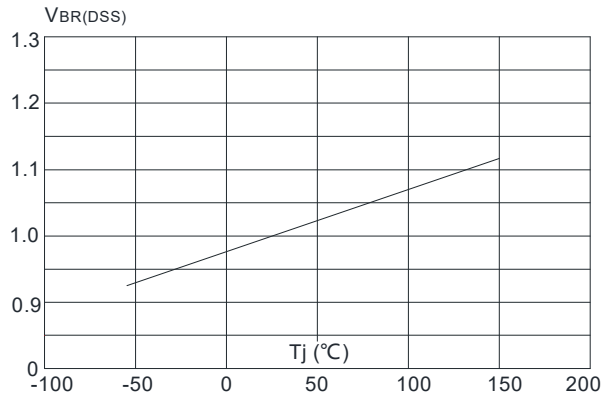


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

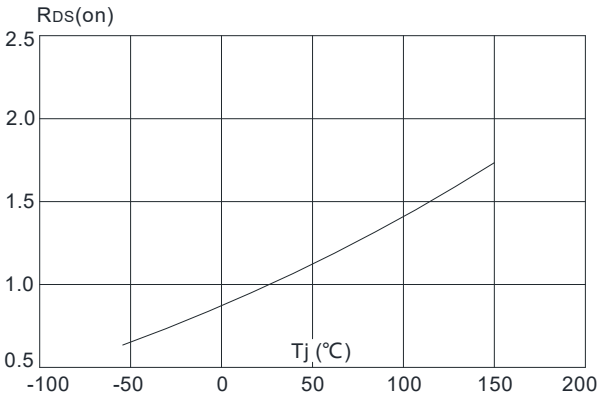


Figure 8: Normalized on Resistance vs. Junction Temperature

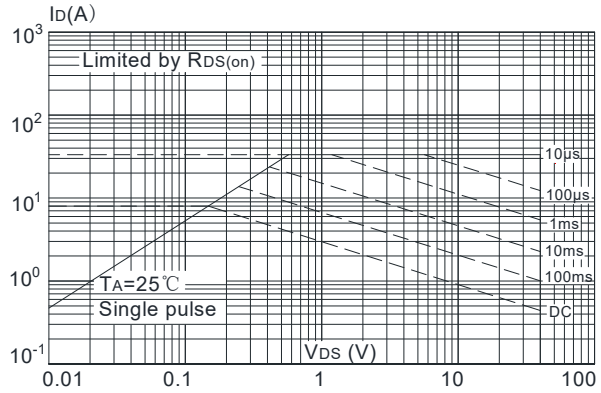


Figure 9: Maximum Safe Operating Area

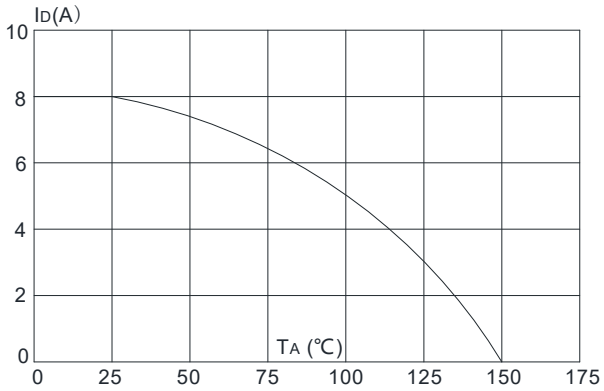


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

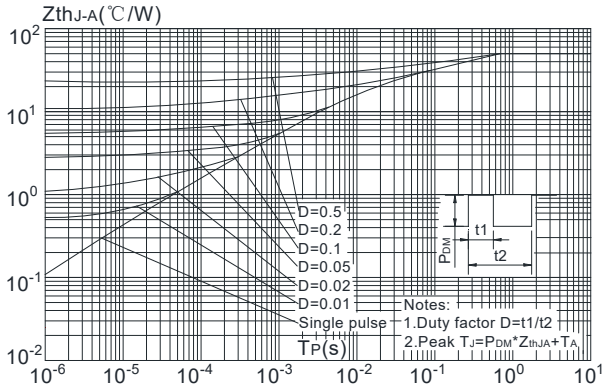


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

P-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	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-40V	---	---	-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	-1.2	-2	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=-10V,I_D=-10 A	---	20	26	mΩ
		V_{GS}=-4.5V,I_D=-5 A	---	30	36	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-20V, V_{GS}=0V, f=1MHz	---	634.6	---	pF
C_{oss}	Output Capacitance		---	102.9	---	
C_{rss}	Reverse Transfer Capacitance		---	76.5	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-20V , V_{GS}=-10V , R_G=6Ω,I_D=-1A	---	9.1	---	ns
t_r	Rise Time		---	7.35	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	32.55	---	ns
t_f	Fall Time		---	17.85	---	ns
Q_g	Total Gate Charge	V_{GS}=-4.5V, V_{DS}=-20V, I_D=-5.5A	---	7.9	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	3.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-1A, T_J=25℃	---	-0.75	-1	V
I_S	Continuous Source Current	V_G=V_D=0V	---	---	-25	A
I_{SM}	Pulsed Source Current	V_G=V_D=0V	---	---	-100	A

Notes:

1.Pulse test; pulse width≤300μs, duty cycle≤2%.

2.Guaranteed by design, not subject to production testing.

P-Typical Characteristics: (T_C=25℃ unless otherwise noted)

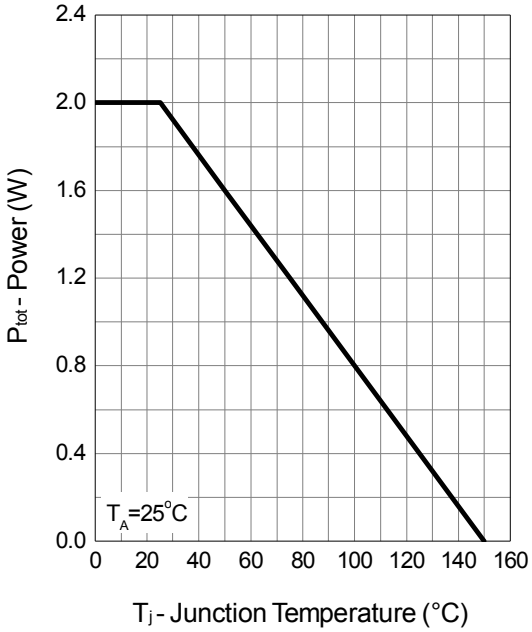


Figure1. Power Dissipation

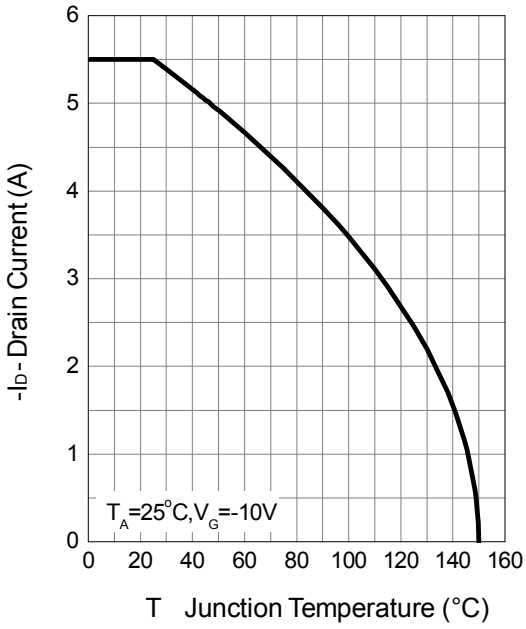


Figure2. Drain Current

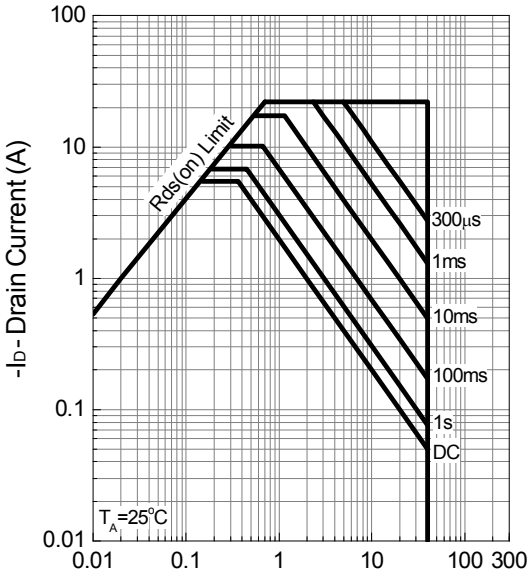


Figure3. Safe Operation Area

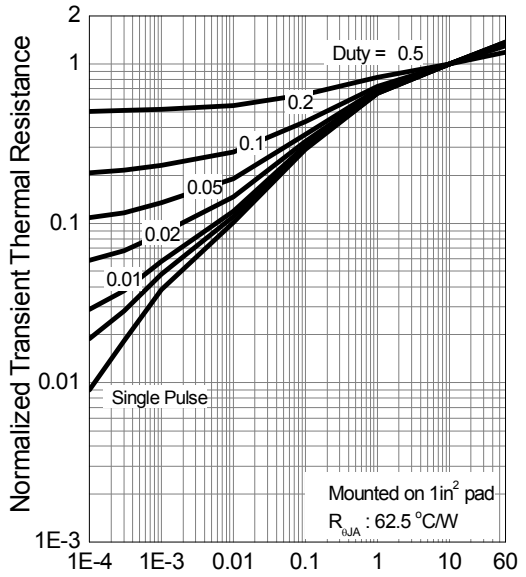


Figure4. Thermal Transient Impedance

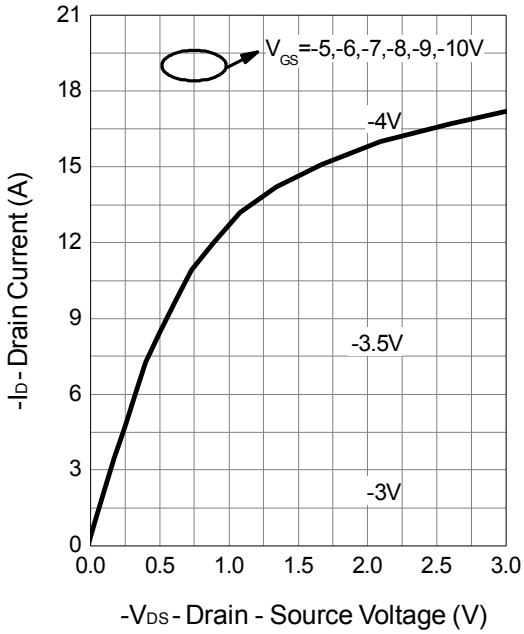


Figure5. Output Characteristics

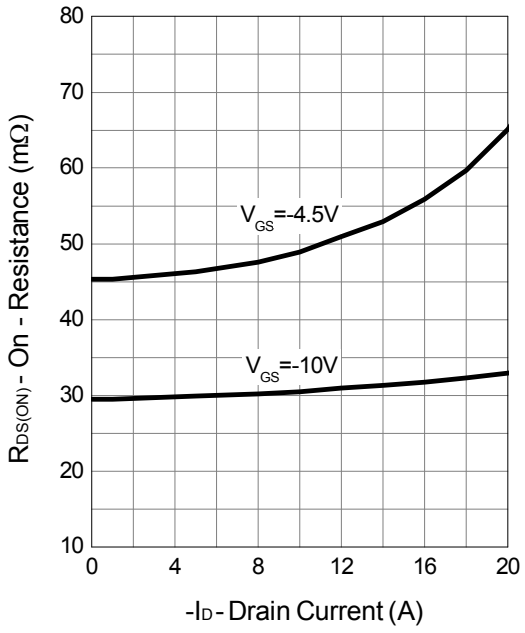


Figure6. Drain-Source On Resistance

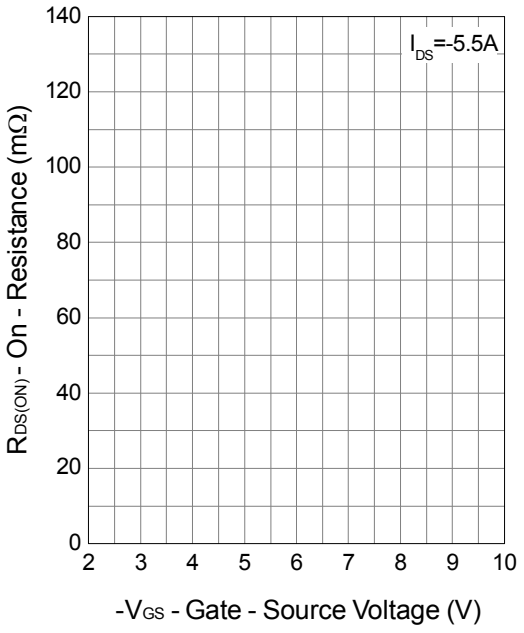


Figure7. Gate-Source On Resistance

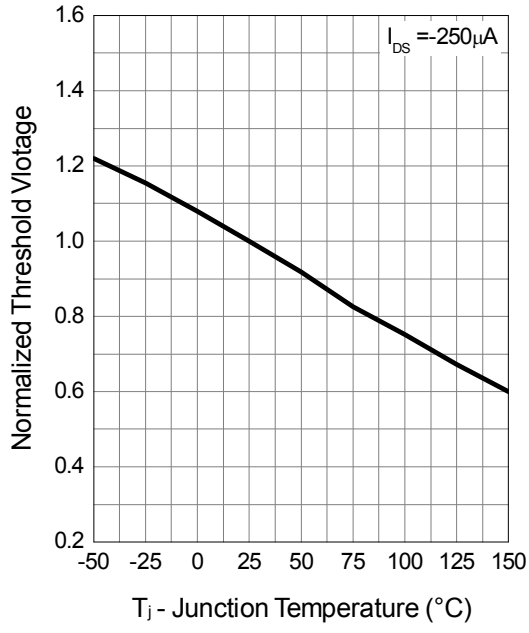


Figure8. Gate Threshold Voltage

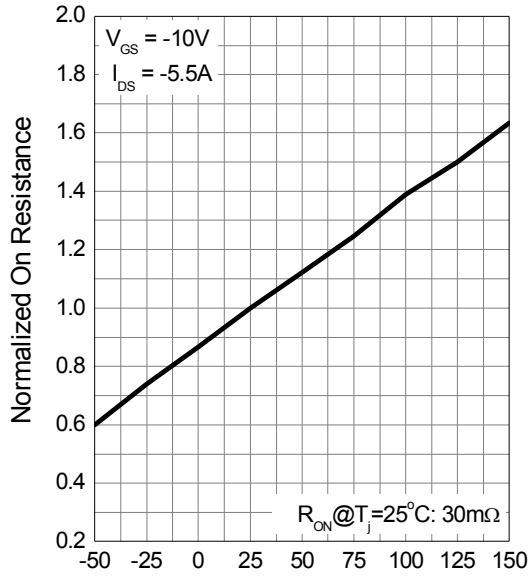


Figure9. Drain-Source On Resistance

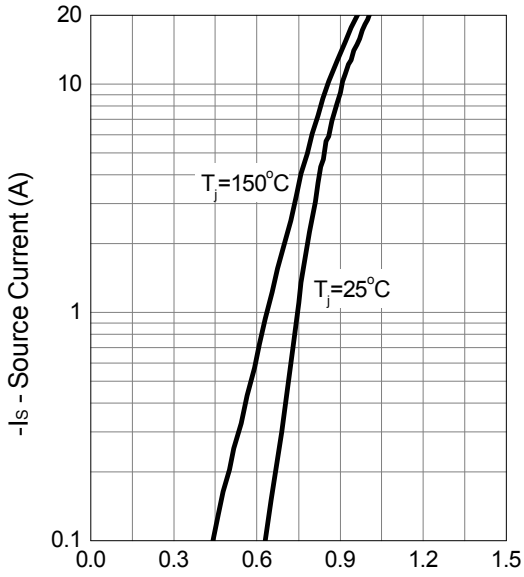


Figure10. Source-Drain Diode Forward

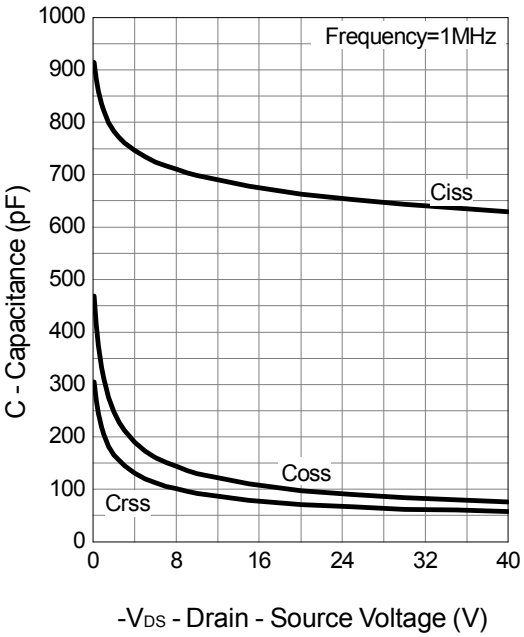


Figure11. Capacitance

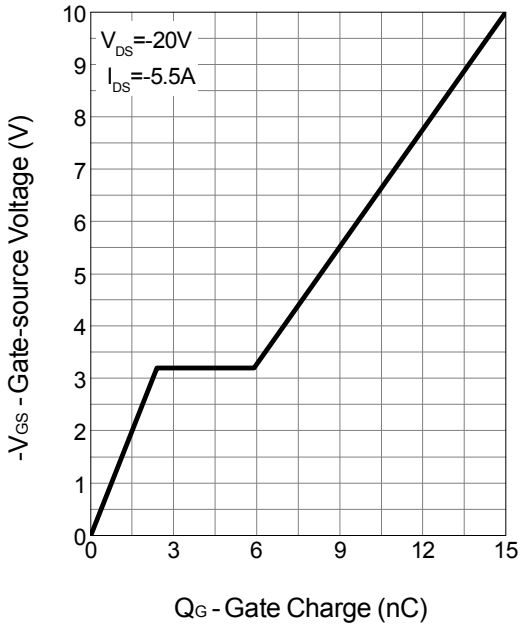
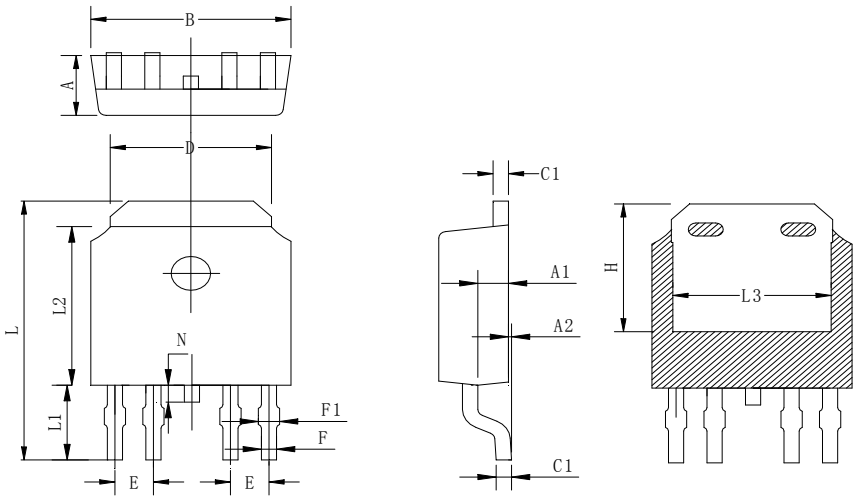


Figure12. Gate Charge

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

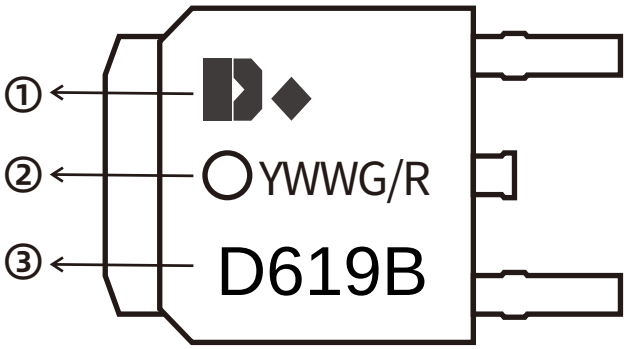
②. Date Code(YWWG / R)

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)
1.0	2024-05-29	Release of final version

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