

Description:

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

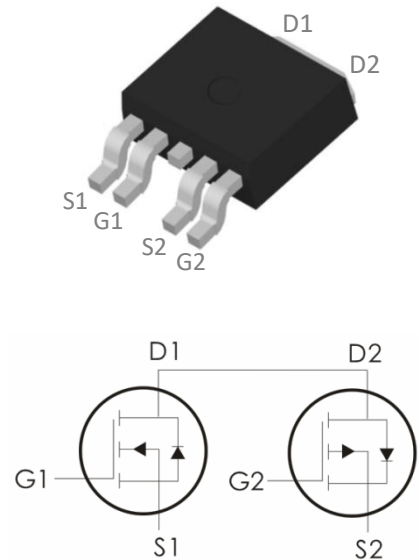
It can be used in a wide variety of applications.

Features:

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

P-Channel: $V_{DS}=-30V, I_D=-30A, R_{DS(on)} < 20m\Omega @ V_{GS}=-10V$ (Typ: $16m\Omega$)

- 1) Low gate charge.
- 2) Green device available.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DOD617-B	D617-B	TO- 252-4	2500 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ C$ 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- $T_C=25^\circ C^1$	40	-30	A
	Continuous Drain Current- $T_C=100^\circ C^1$	28	-21	
I_{DM}	Pulsed Drain Current ²	160	-120	A
E_{AS}	Single pulse avalanche energy ³	30	46	mJ
P_D	Power Dissipation - $T_C=25^\circ C$	23	25	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150		$^\circ C$

Thermal Characteristics:

Symbol	Parameter	N-CH	P-CH	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	5.4	5	$^\circ C/W$

N-Channel Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
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 =250 μ A	1	1.5	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ⁴	V _{GS} =10V, I _D =10A	---	7.5	10	m Ω
		V _{GS} =4.5V, I _D =5A	---	11	17	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	900	---	pF
C _{oss}	Output Capacitance		---	133	--	
C _{rss}	Reverse Transfer Capacitance		---	105	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V, I _D =5A, R _{ENG} =3 Ω ,V _{GS} =10V	---	6.3	---	ns
t _r	Rise Time		---	19.9	---	ns
t _{d(off)}	Turn-Off Delay Time		---	23.1	---	ns
t _f	Fall Time		---	5.2	---	ns
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =5A	---	9.82	---	nC
Q _{gs}	Gate-Source Charge		---	4.2	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	5.2	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =5A	---	---	1.2	V
I _S	Continuous Drain Current	V _D =V _G =0V	---	---	33.3	A
I _{SM}	Pulsed Drain Current		---	---	133.3	A
T _{rr}	Reverse Recovery Time	I _F =5A, T _J =25 °C	---	8	---	ns
Q _{rr}	Reverse Recovery Carrge	dI/dt=100A/us	---	1.6	---	nC

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 : $T_J=25^{\circ}C, V_{DD}=15V, V_G=10V, L=0.5mH$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Characteristics: ($T_C=25^{\circ}C$ unless otherwise noted)

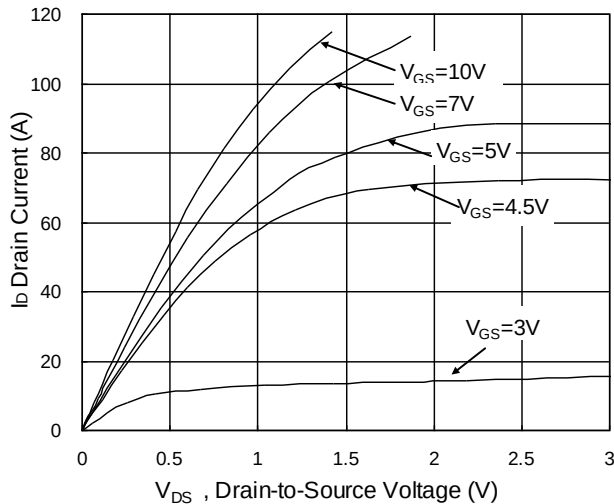


Fig.1 Typical Output Characteristics

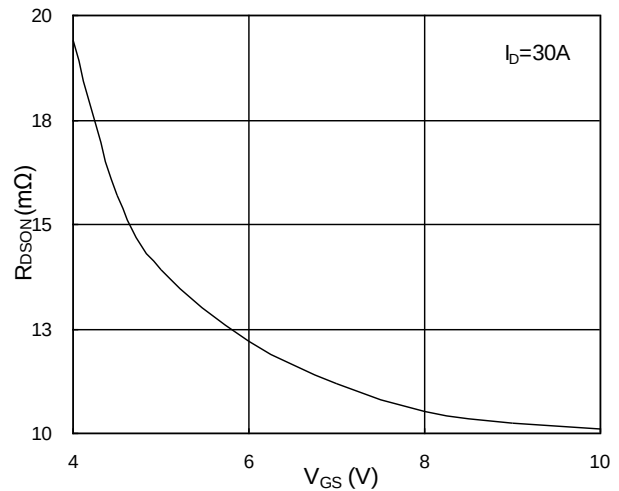


Fig.2 On-Resistance vs. G-S Voltage

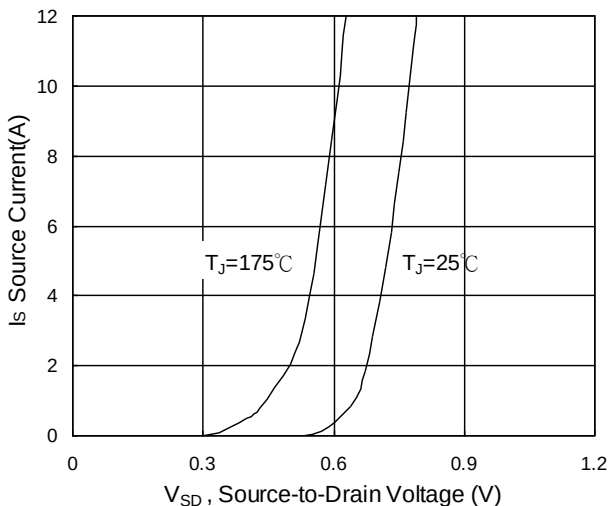


Fig.3 Forward Characteristics of Reverse

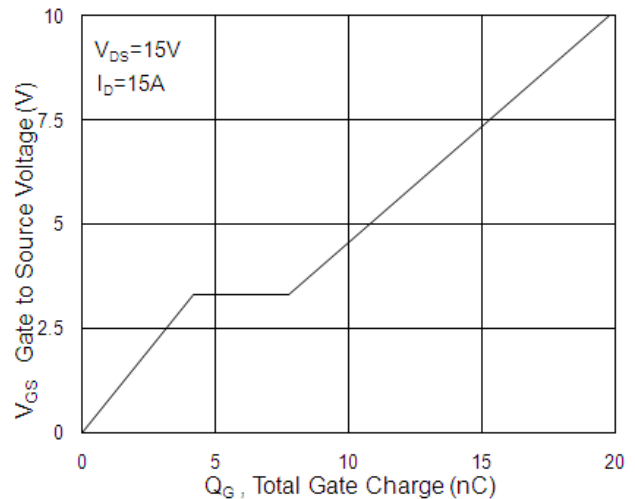


Fig.4 Gate-Charge Characteristics

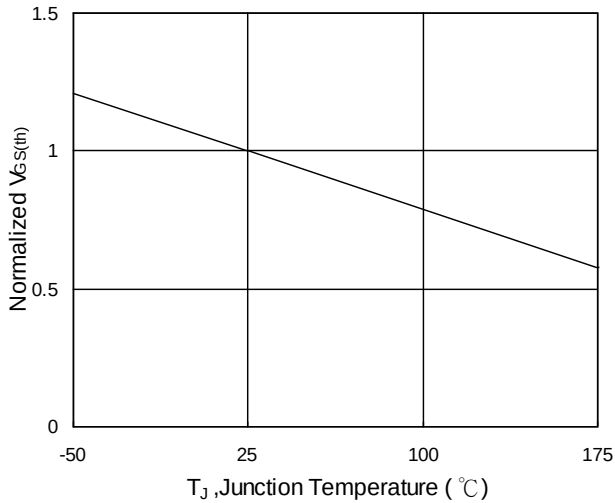


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

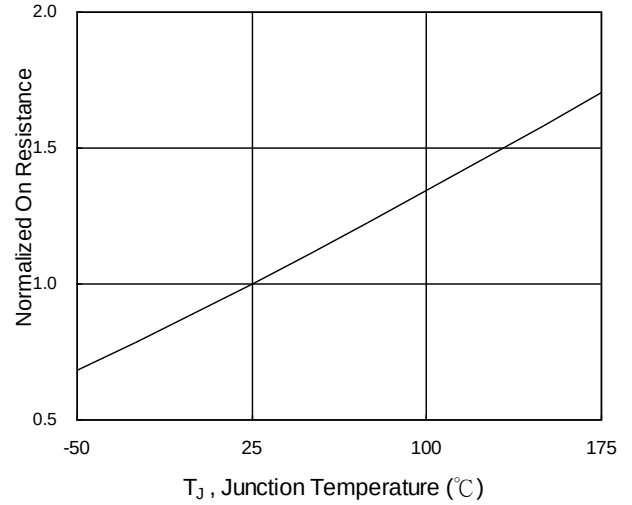


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

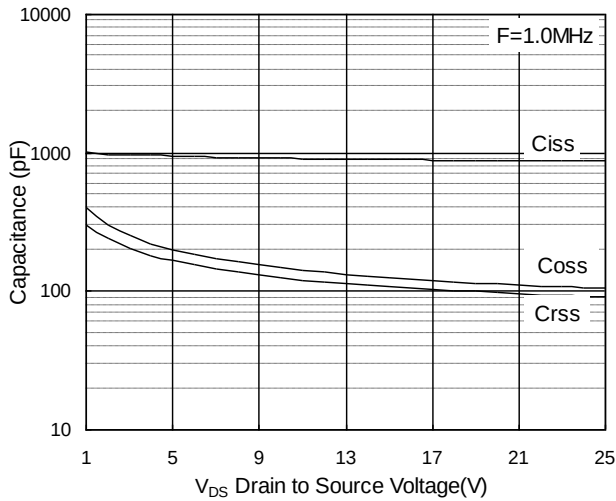


Fig.7 Capacitance

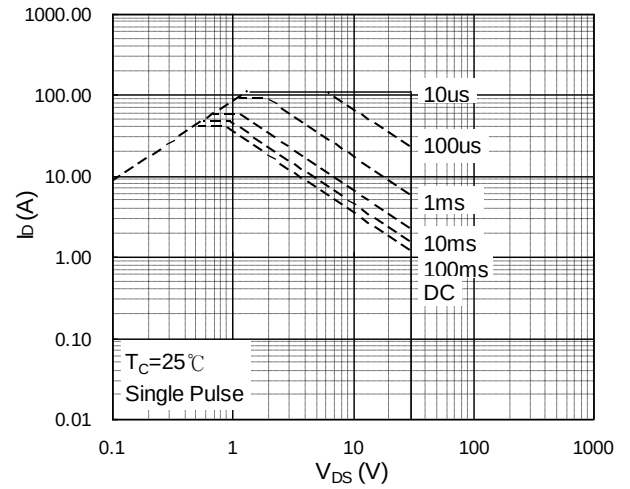


Fig.8 Safe Operating Area

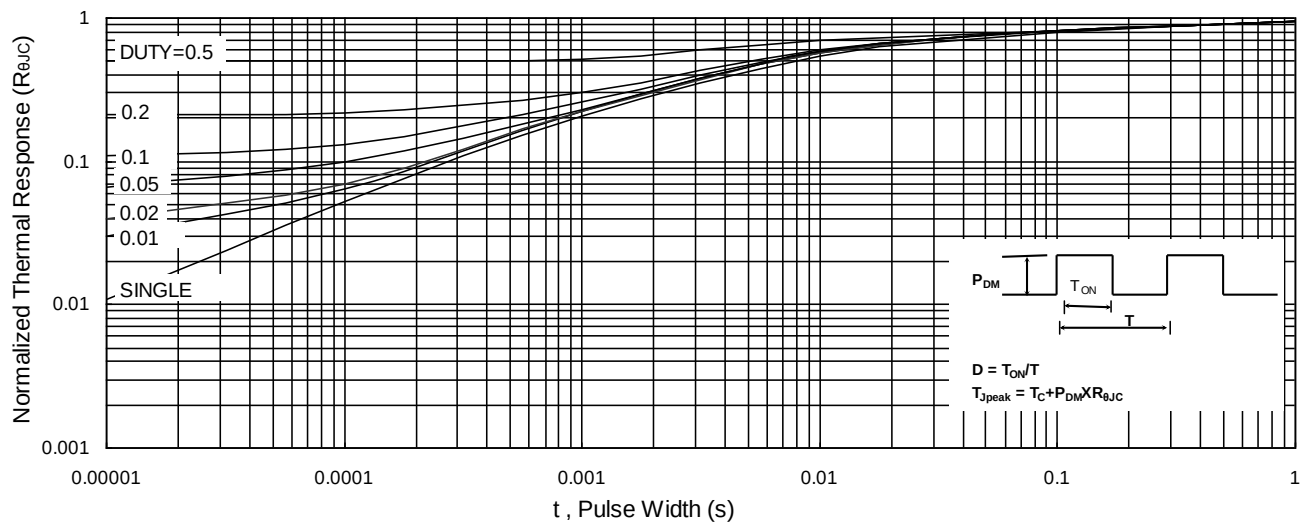


Fig.9 Normalized Maximum Transient Thermal Impedance

P-Channel Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-30V	---	---	-1	μ A
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 =250 μ A	-1	-1.7	-3	V
R _{DS(ON)}	Drain-Source On Resistance ⁴	V _{GS} =-10V, I _D =-10A	---	16	20	m Ω
		V _{GS} =-4.5V, I _D =-5A	---	22	27	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1000	---	pF
C _{oss}	Output Capacitance		---	177	---	
C _{rss}	Reverse Transfer Capacitance		---	150	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = -15V, I _D =-5A V _{GS} = -10V, R _{GEN} =3 Ω	---	10.5	---	ns
t _r	Rise Time		---	7.3	---	ns
t _{d(off)}	Turn-Off Delay Time		---	52	---	ns
t _f	Fall Time		---	21	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-15V, I _D =-5A	---	11	---	nC
Q _{gs}	Gate-Source Charge		---	3.1	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	6.3	---	nC
Drain-Source Diode Characteristics						
I _S	Continuous Drain to Source Diode	V _D =V _G =0V	---	---	-25	A
I _{SM}	Pulsed Drain to Source Diode		---	---	-100	---
T _{rr}	Reverse Recovery Time	I _F =-5A, T _J =25 °C	---	-64	---	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/us	---	-25	---	nc
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =-3A	---	---	-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 : $T_J=25^{\circ}C, V_{DD}=-15V, V_G=-10V, L=1mH$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

P-Typical Characteristics: ($T_C=25^{\circ}C$ unless otherwise noted)

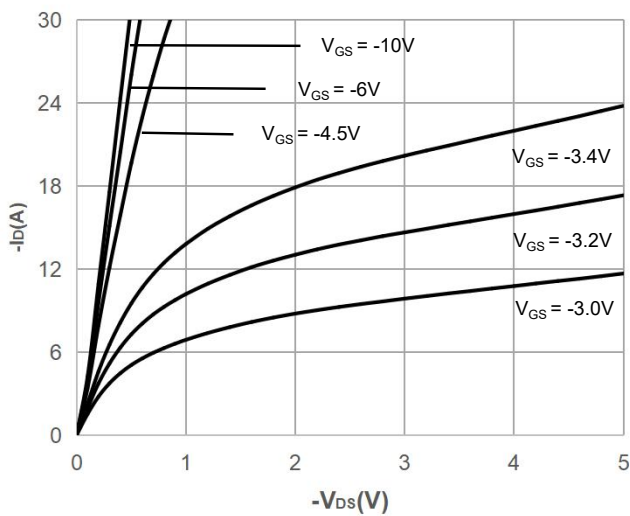


Figure 1: Output Characteristics

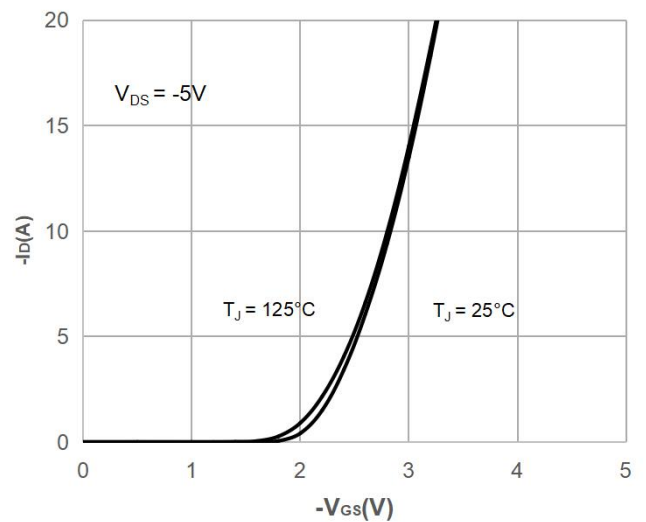


Figure 2: Typical Transfer Characteristics

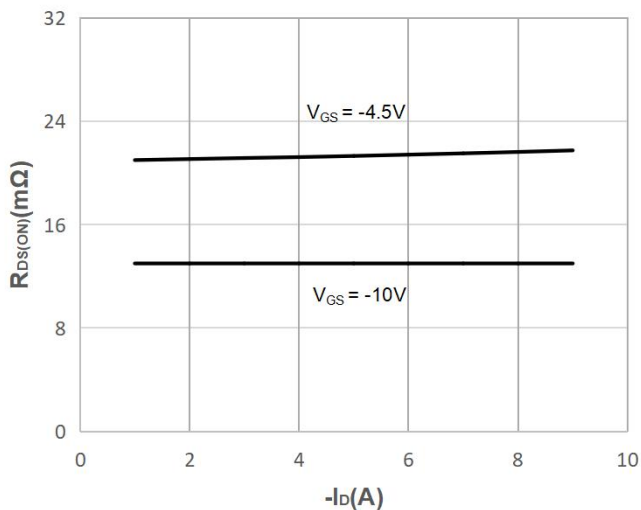


Figure 3: On-resistance vs. Drain Current

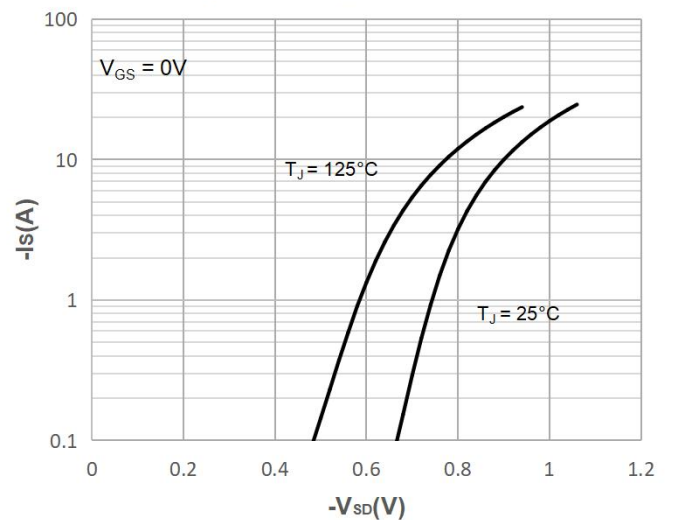


Figure 4: Body Diode Characteristics

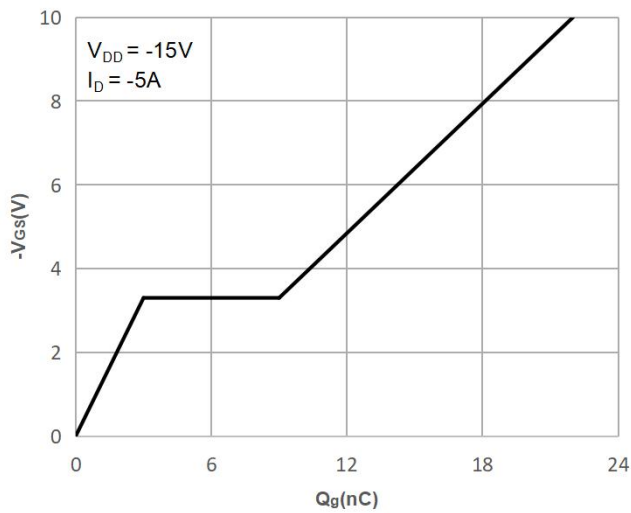


Figure 5: Gate Charge Characteristics

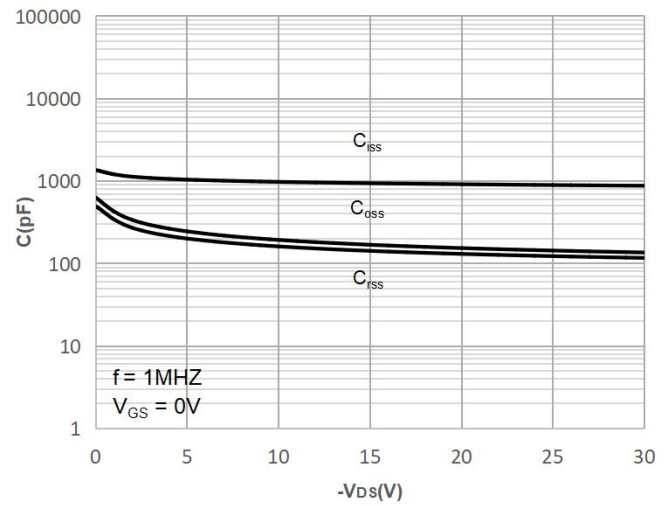


Figure 6: Capacitance Characteristics

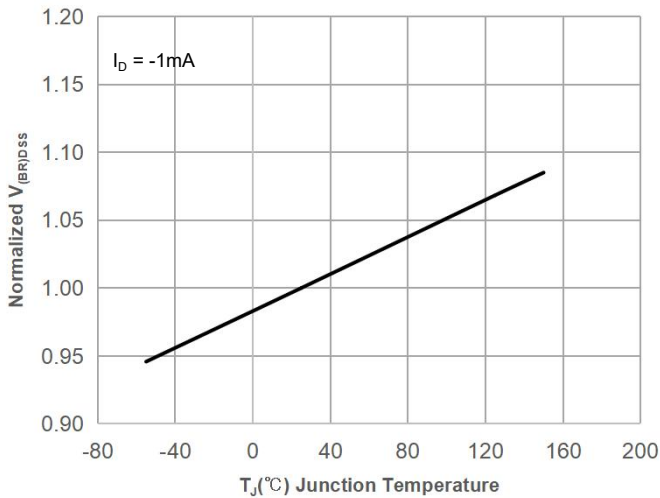


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

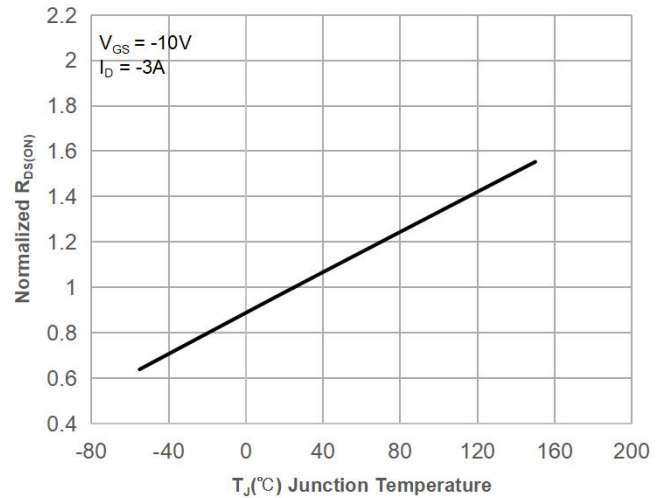


Figure 8: Normalized on Resistance vs. Junction Temperature

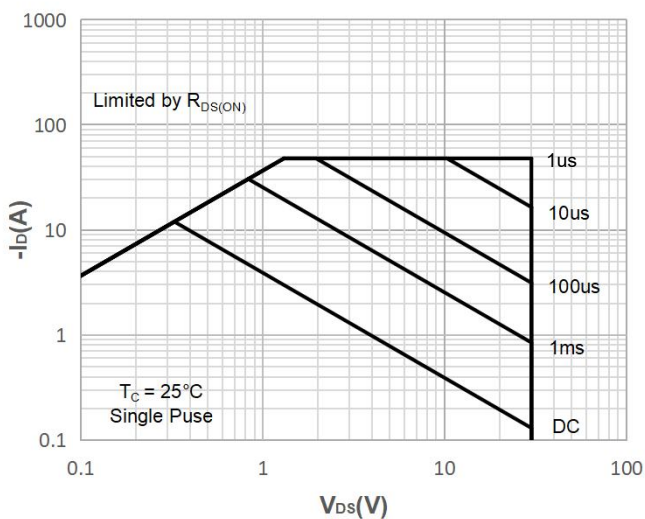


Figure 9: Maximum Safe Operating Area

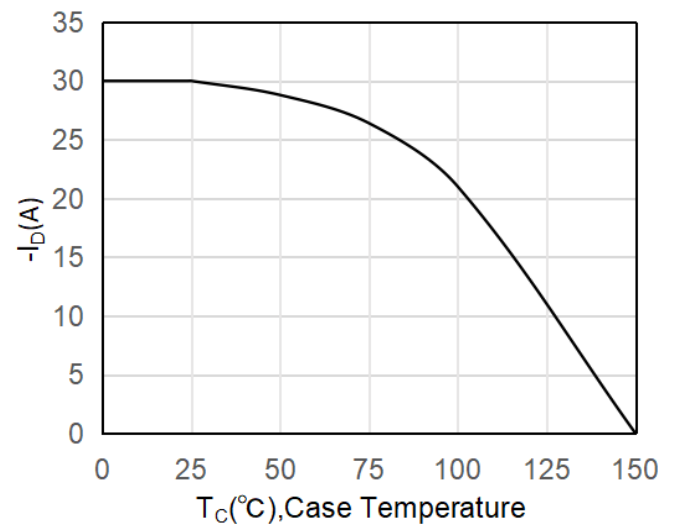


Figure 10: Maximum Continuous Driant Current vs. Case Temperature

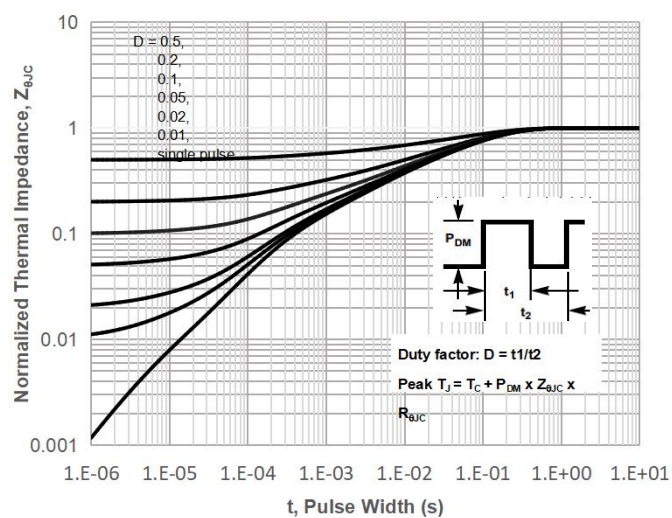


Figure 11: Normalized Maximum Transient Thermal Impedance

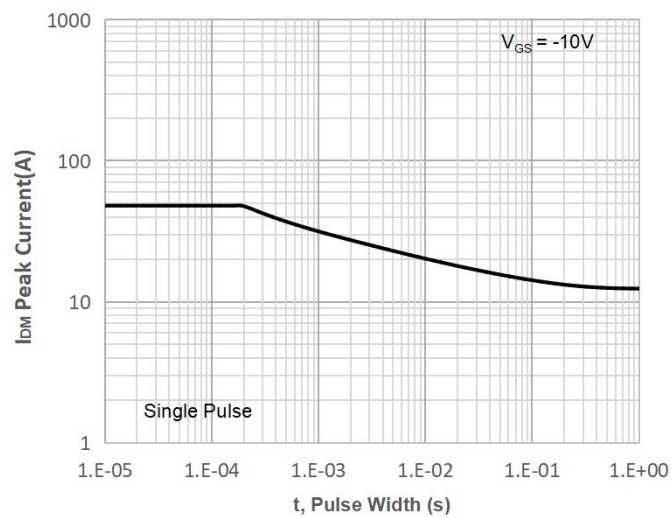
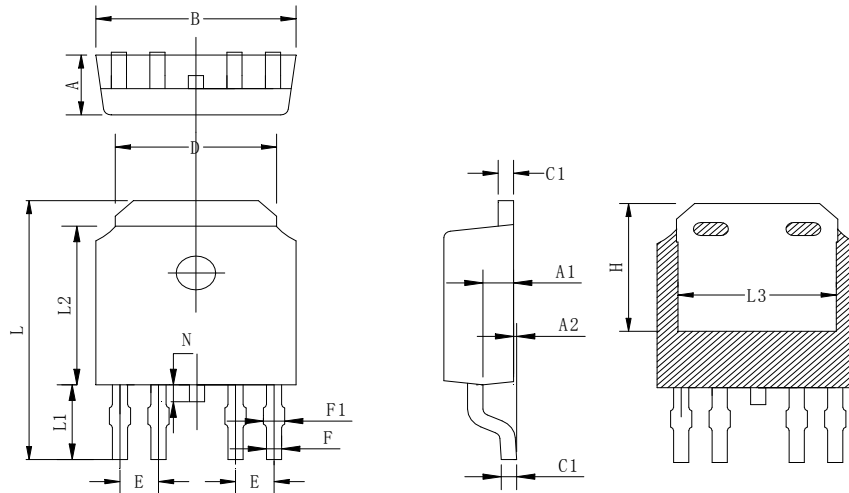


Figure 12: Peak Current Capacity

TO-252-4 Package Outline Data

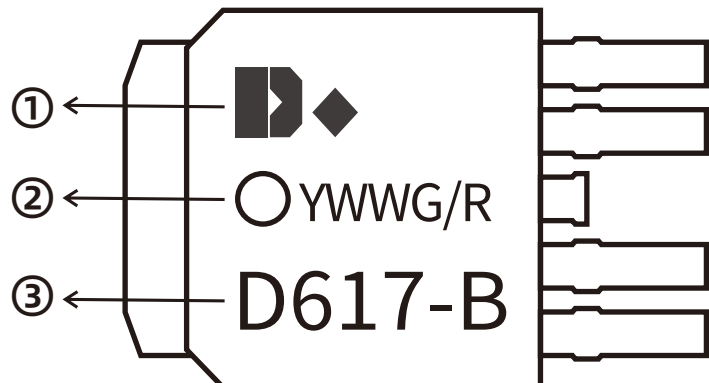
UNIT: mm



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	2026-04-16	Release of final version

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