

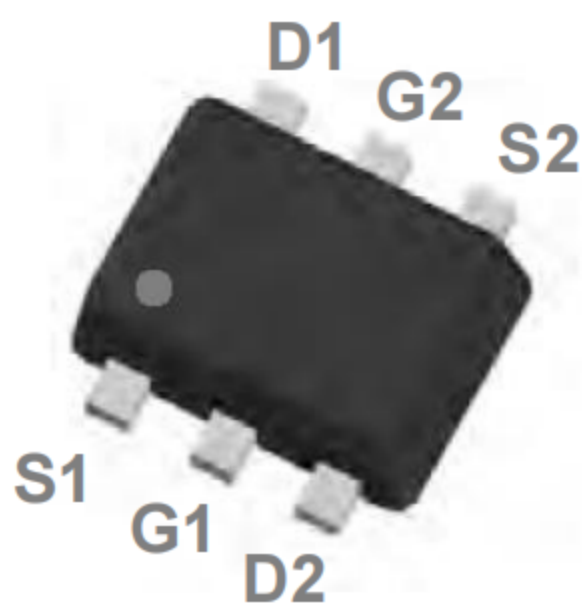
Features

- Fast switching
- Green Device Available
- Suit for 1.5V Gate Drive Applications

Application

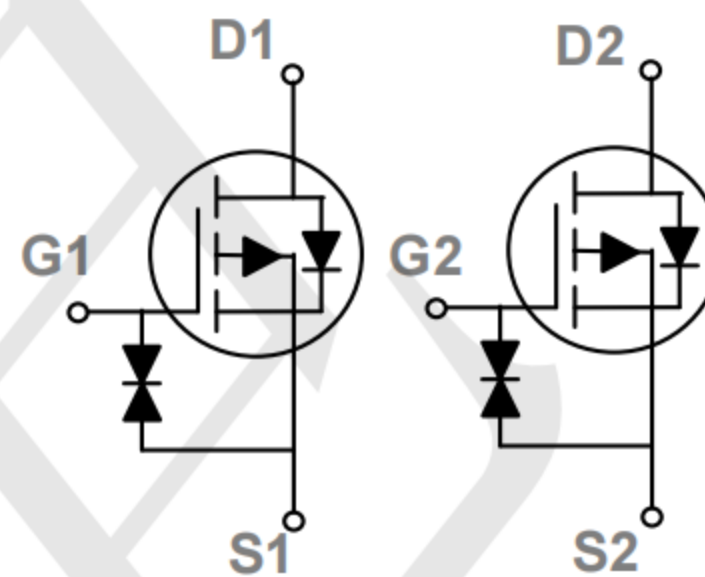
- Notebook
- Load Switch
- Networking
- Hand-held Instruments

Package and Pin Configuration



Marking: TU.R

Circuit diagram



Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current – Continuous ($T_C=25^\circ\text{C}$)	-1.2	A
I_{DM}	Drain Current – Pulsed ¹	-2.1	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	312	mW
	Power Dissipation – Derate above 25°C	2.5	mW/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	400	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-20	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.01	---	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-16V, V _{GS} =0V, T _J =125°C	---	---	-10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V, V _{DS} =0V	---	---	±20	uA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-0.5A	---	400	600	mΩ
		V _{GS} =-2.5V, I _D =-0.5A	---	570	700	
		V _{GS} =-1.8V, I _D =-0.1A	---	800	1100	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.5	-0.75	1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	3	---	mV/°C

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2,3}	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-1A	---	0.5		nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	0.28		
Q _{gd}	Gate-Drain Charge ^{2,3}		---	0.28		
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =-10V, V _{GS} =-4.5V, R _G =6Ω I _D =-1A	---	0.4		ns
T _r	Rise Time ^{2,3}		---	0.06		
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	0.02		
T _f	Fall Time ^{2,3}		---	0.8		
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, F=1MHz	---	55		pF
C _{oss}	Output Capacitance		---	6		
C _{rss}	Reverse Transfer Capacitance		---	4.5		

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-0.2A, T _J =25°C	---	-0.75	-1.1	V

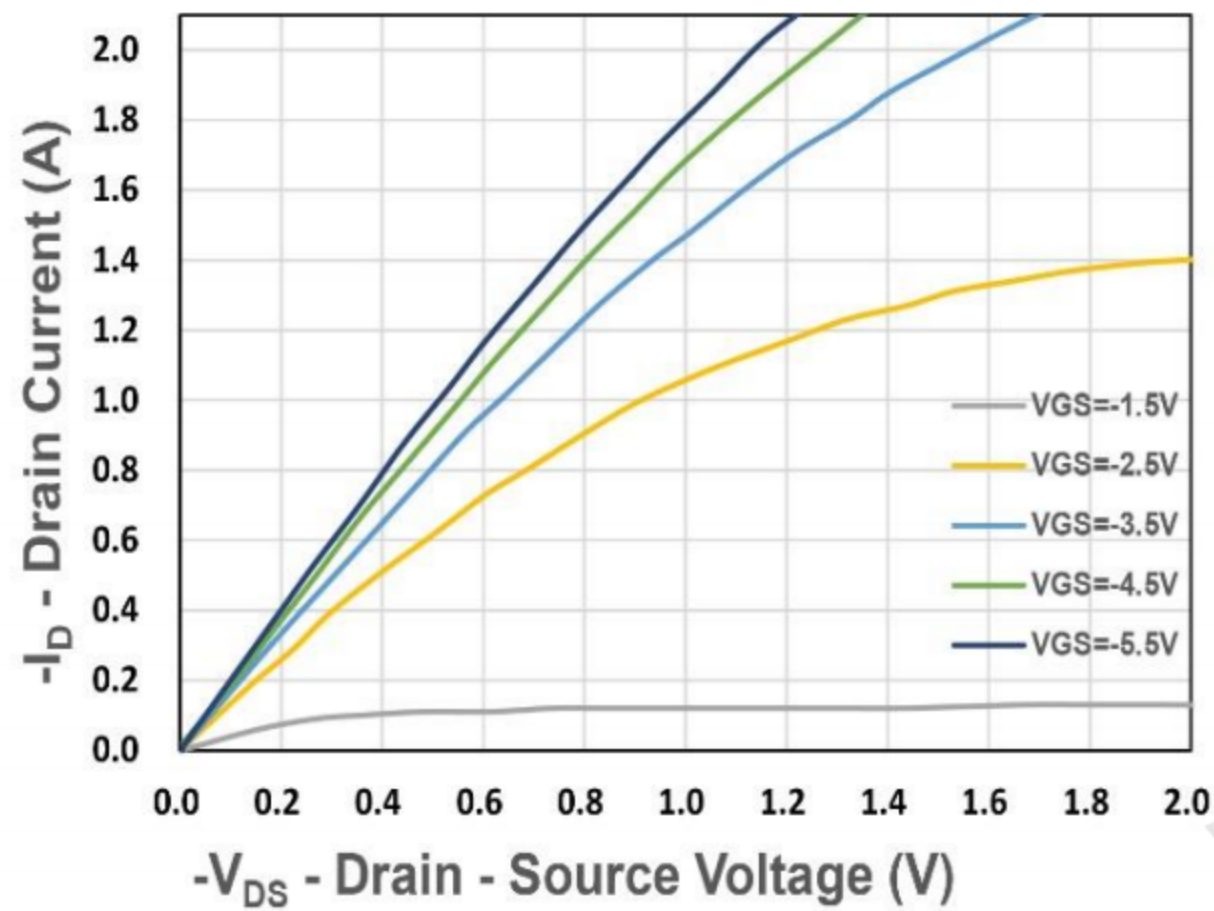


Figure 1. Output Characteristics

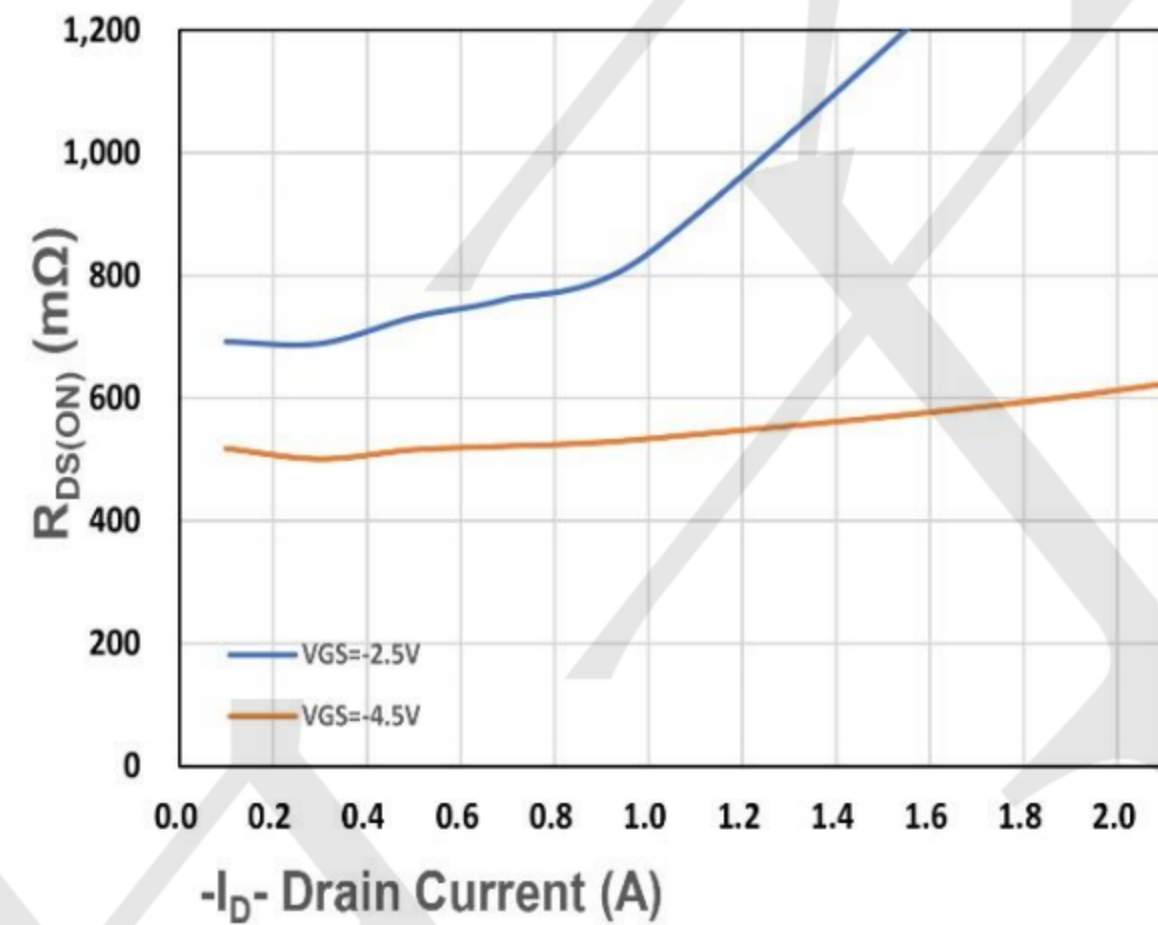


Figure 2. On-Resistance vs. I_D

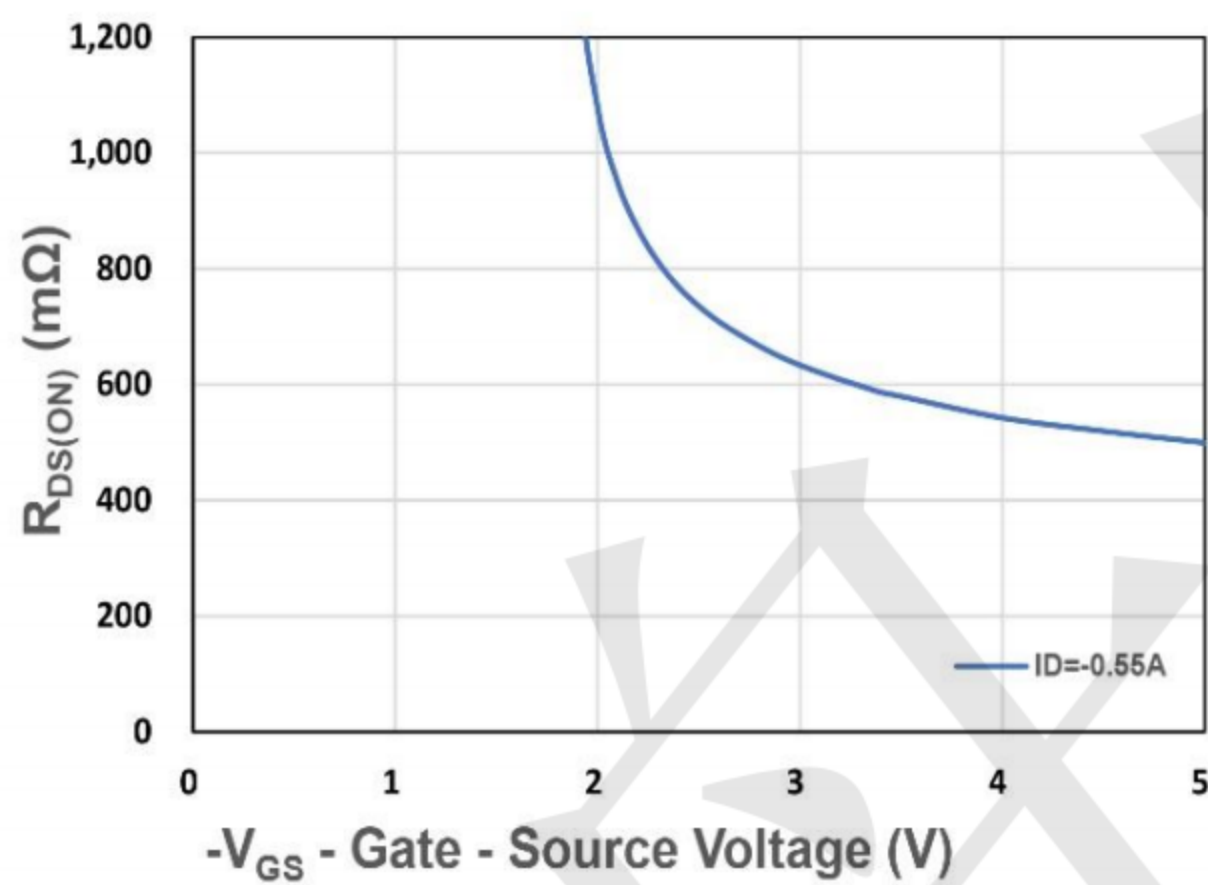


Figure 3. On-Resistance vs. V_{GS}

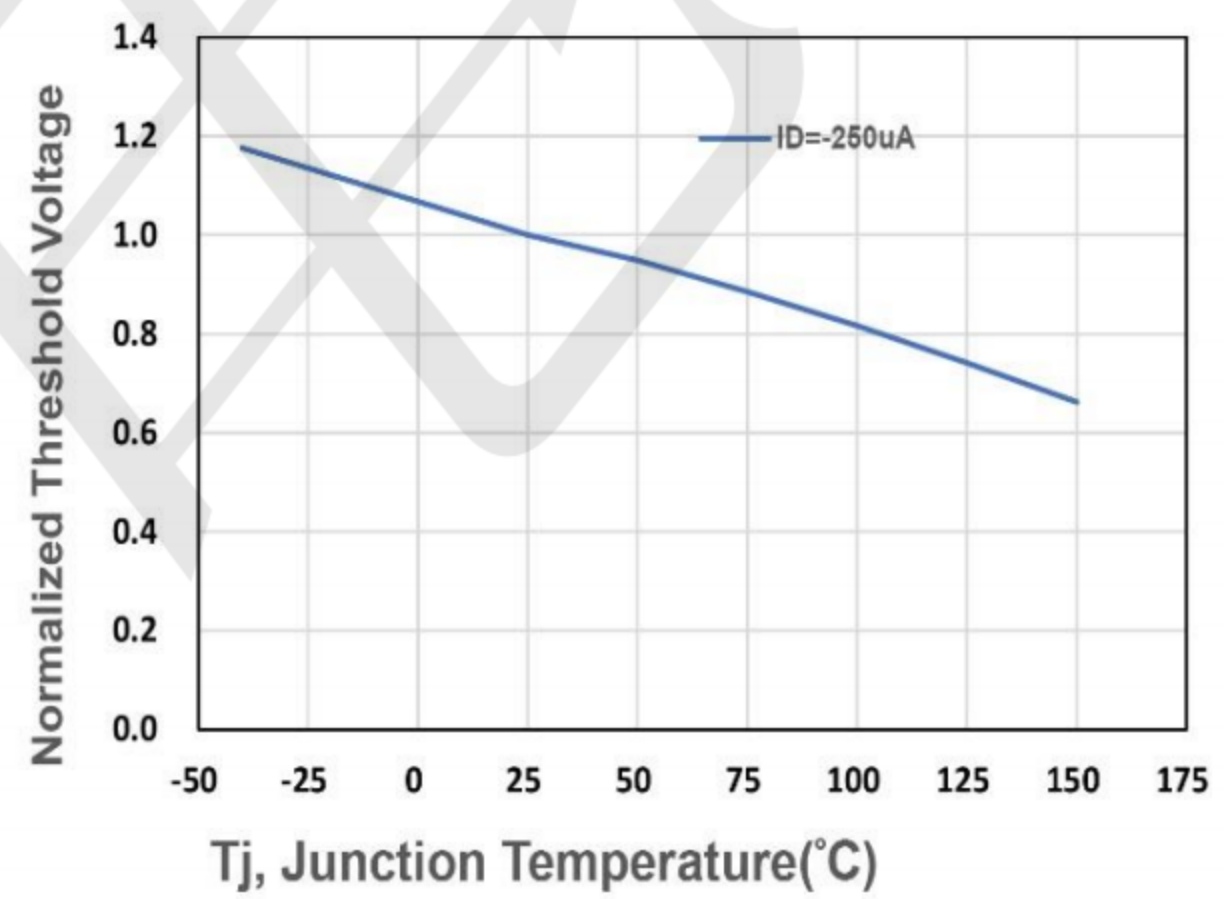


Figure 4. Gate Threshold Voltage

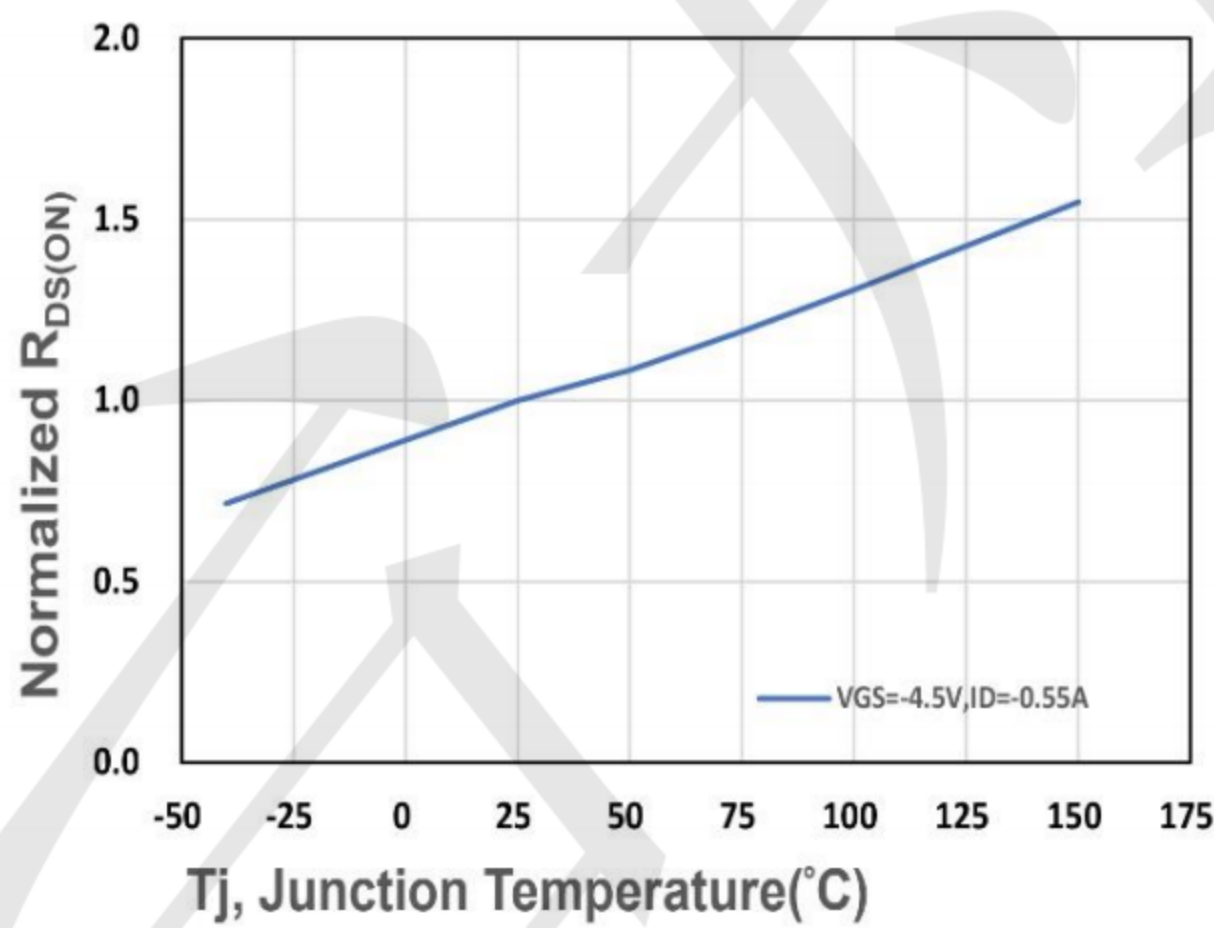


Figure 5. Drain-Source On Resistance

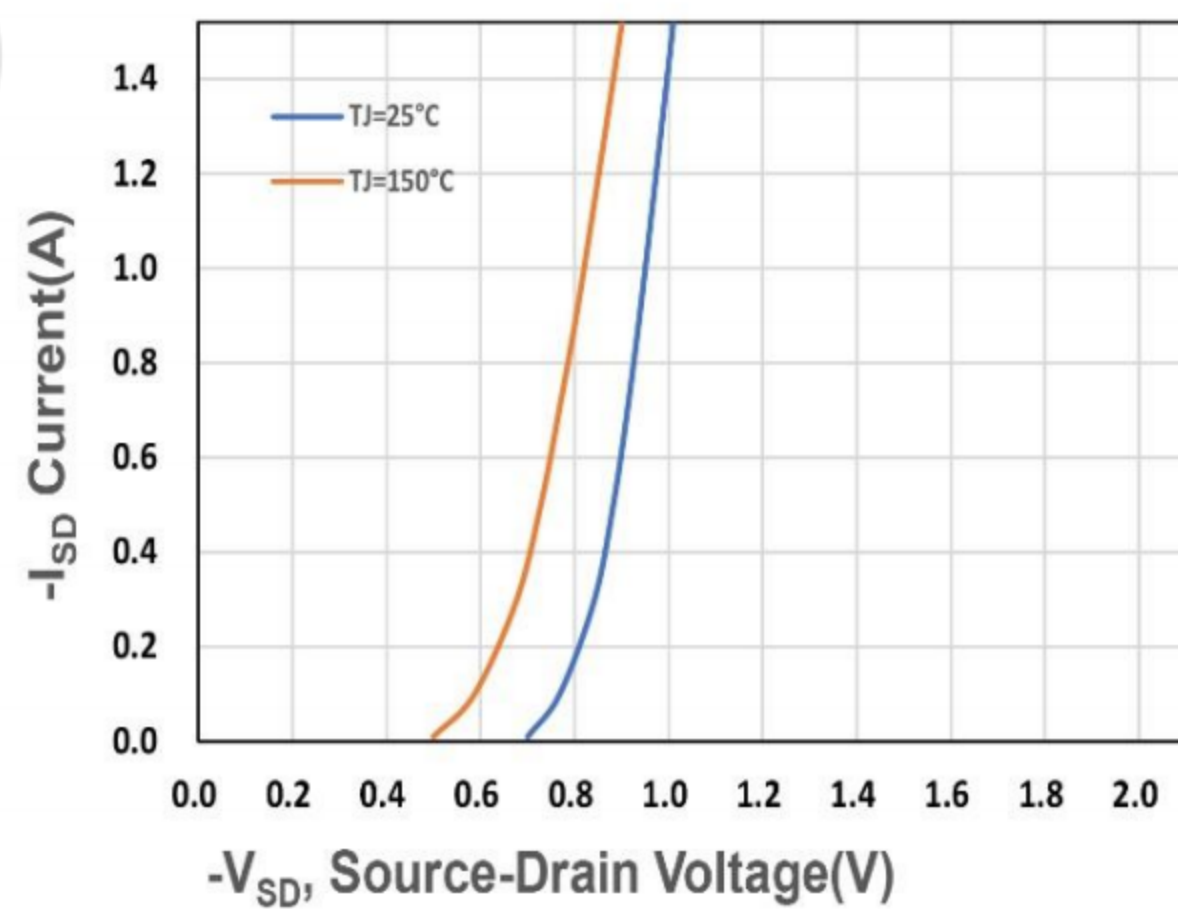


Figure 6. Source-Drain Diode Forward

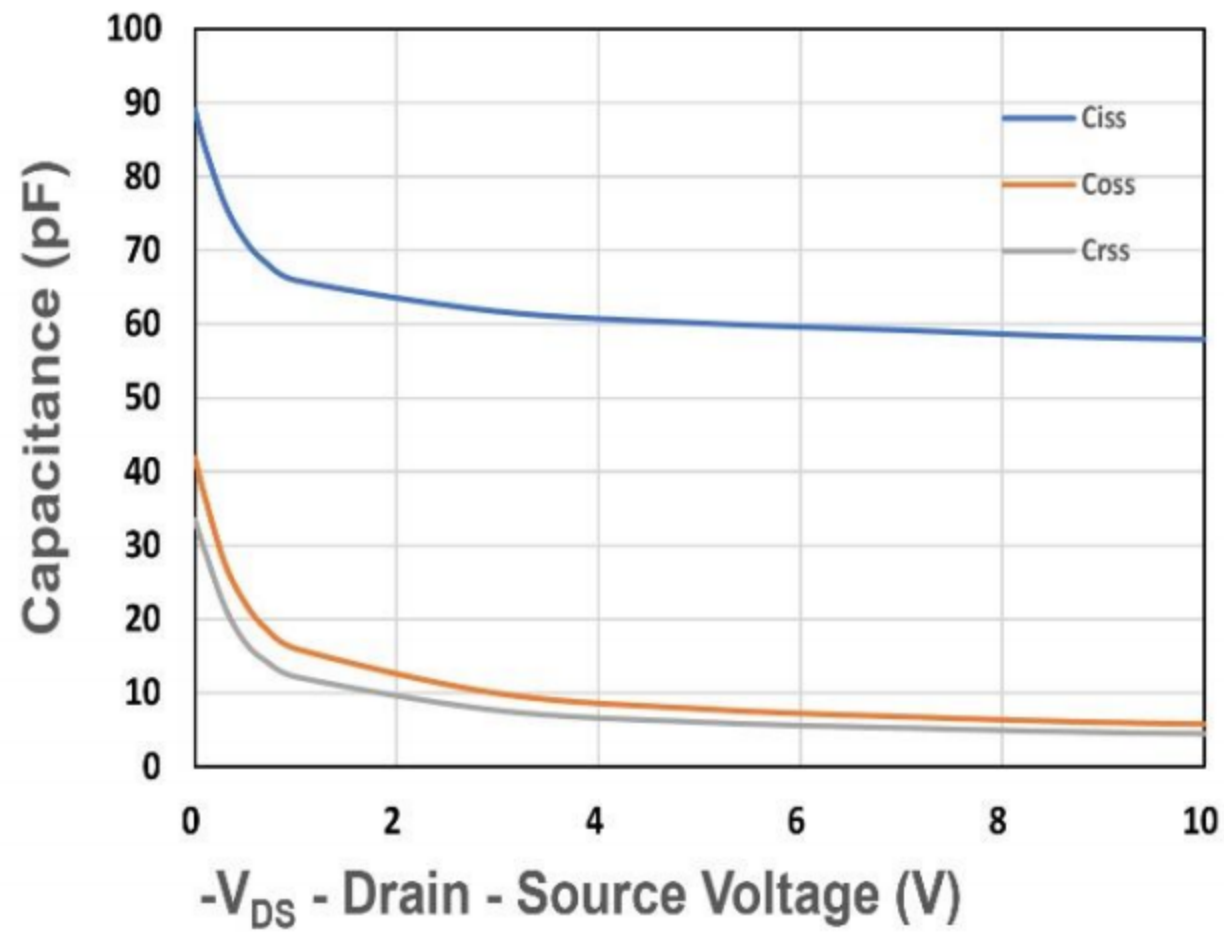


Figure 7. Capacitance

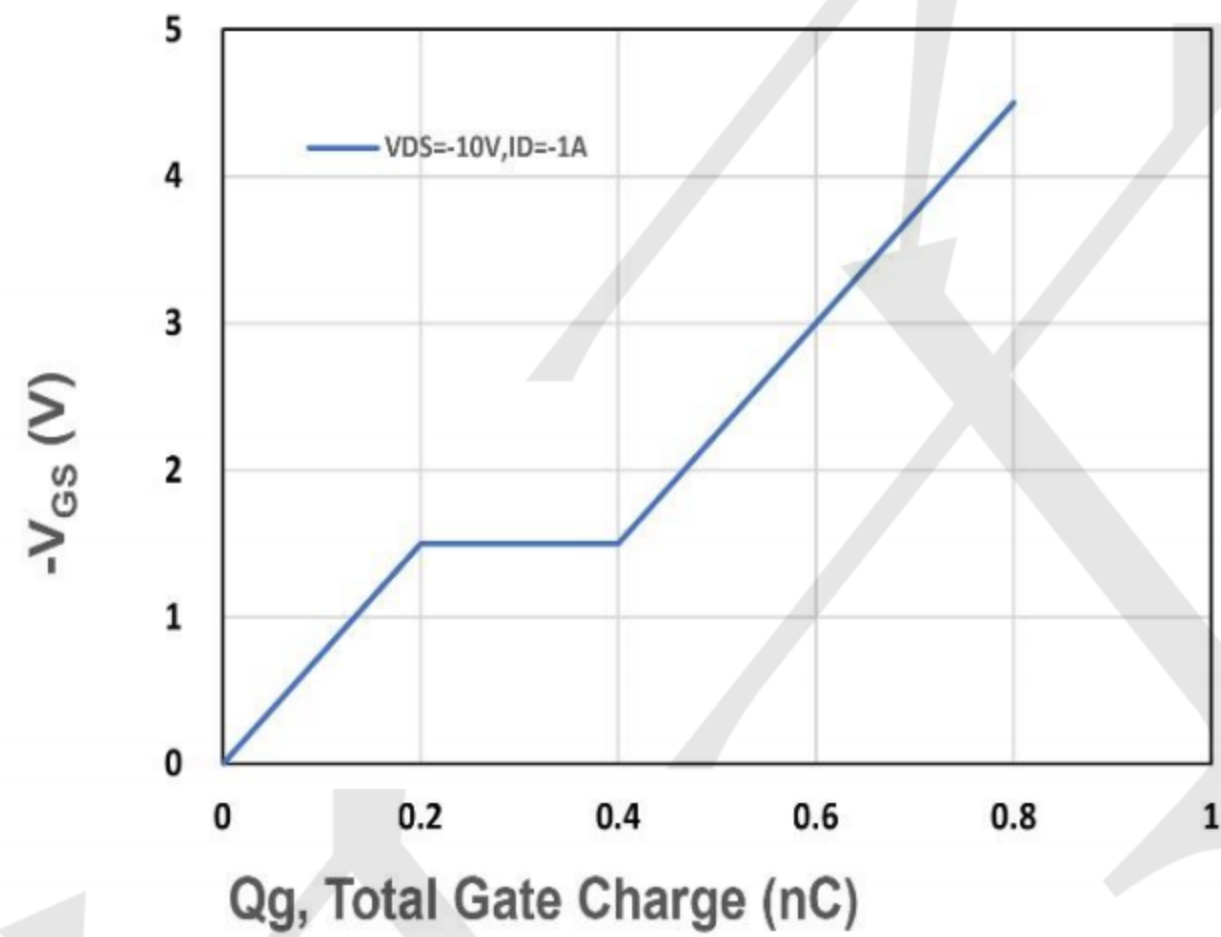


Figure 8. Gate Charge Characteristics

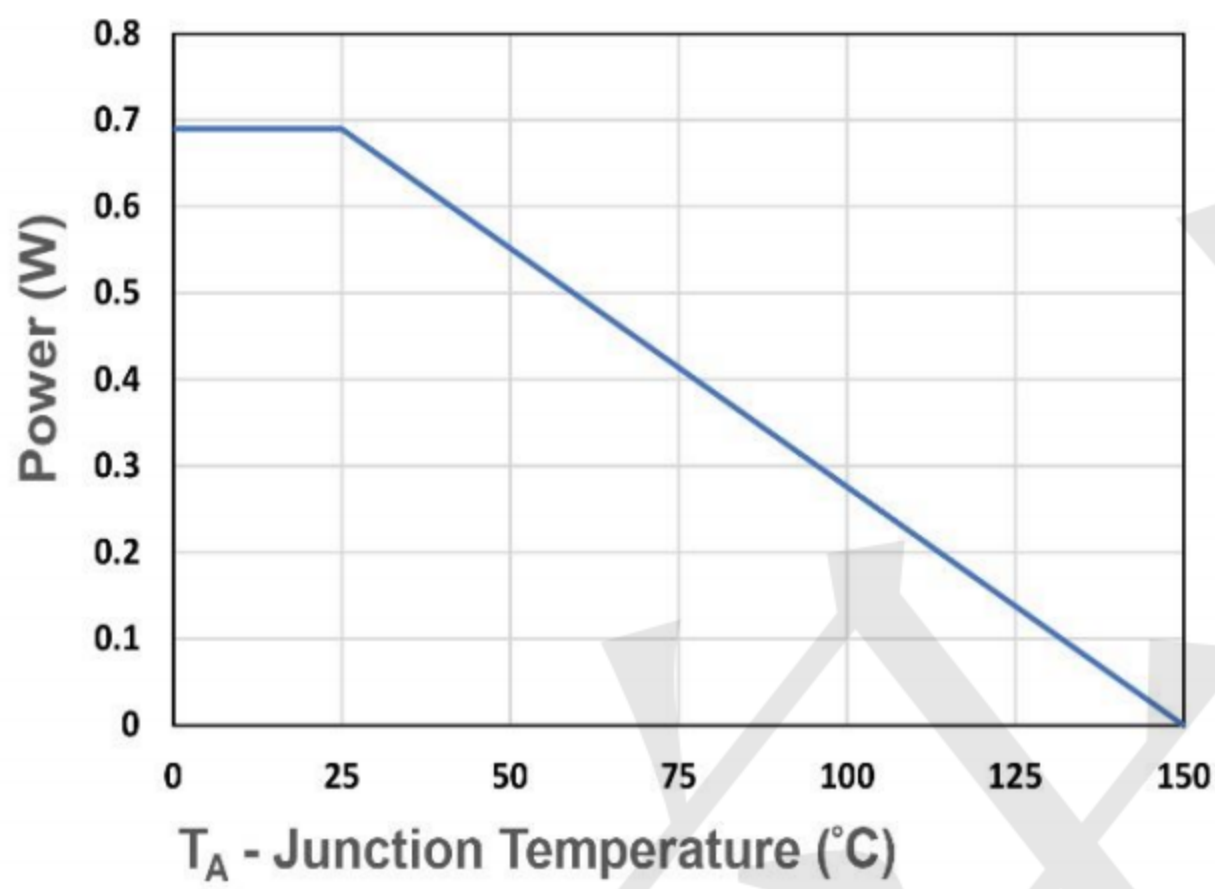


Figure 9. Power Dissipation

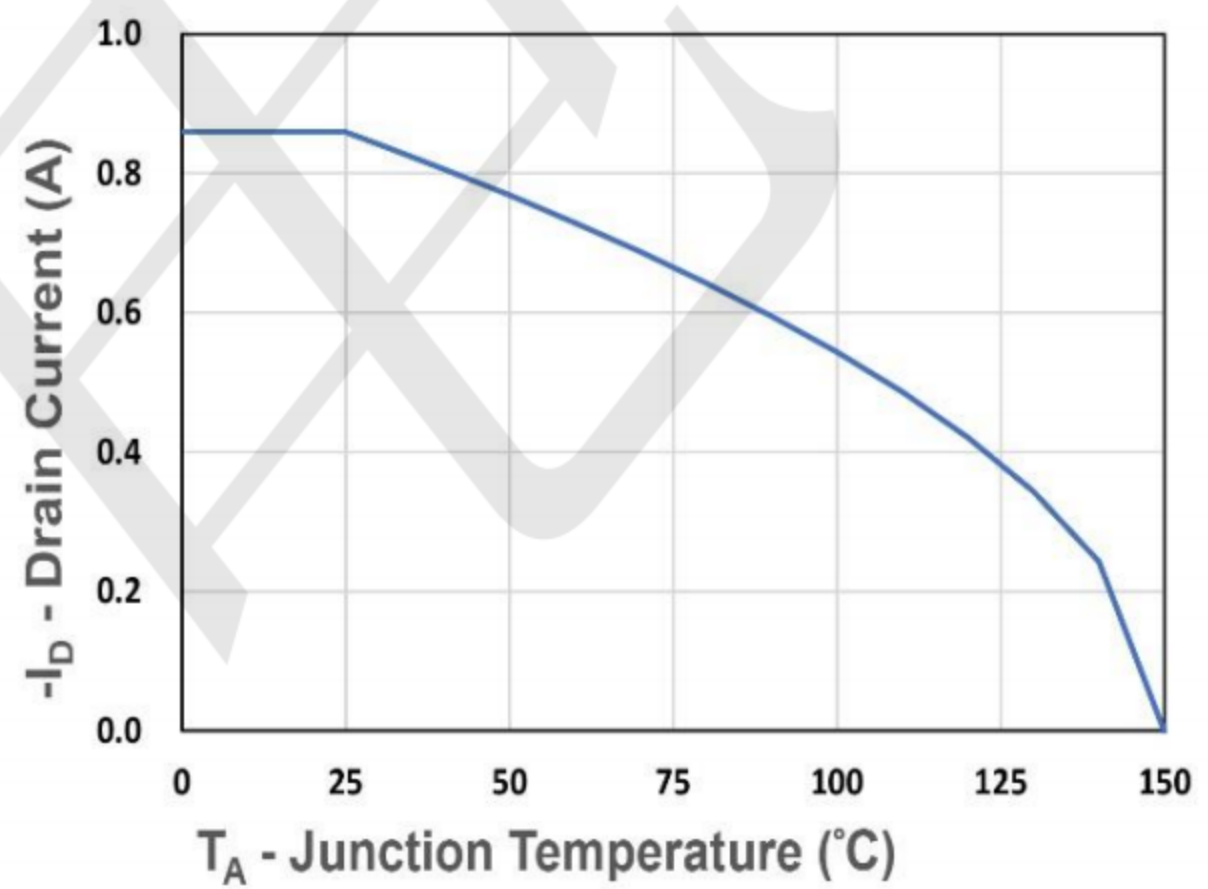


Figure 10. Drain Current

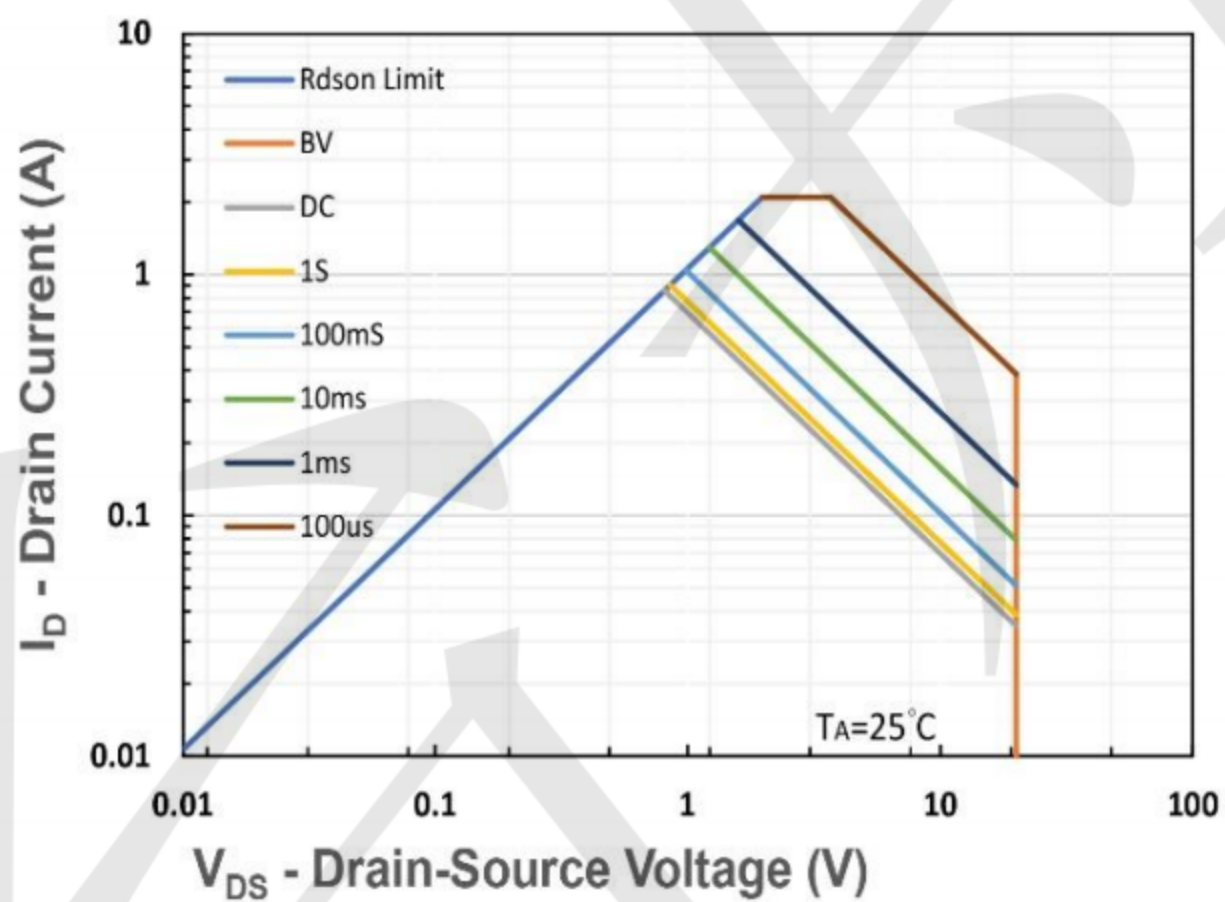


Figure 11. Safe Operating Area

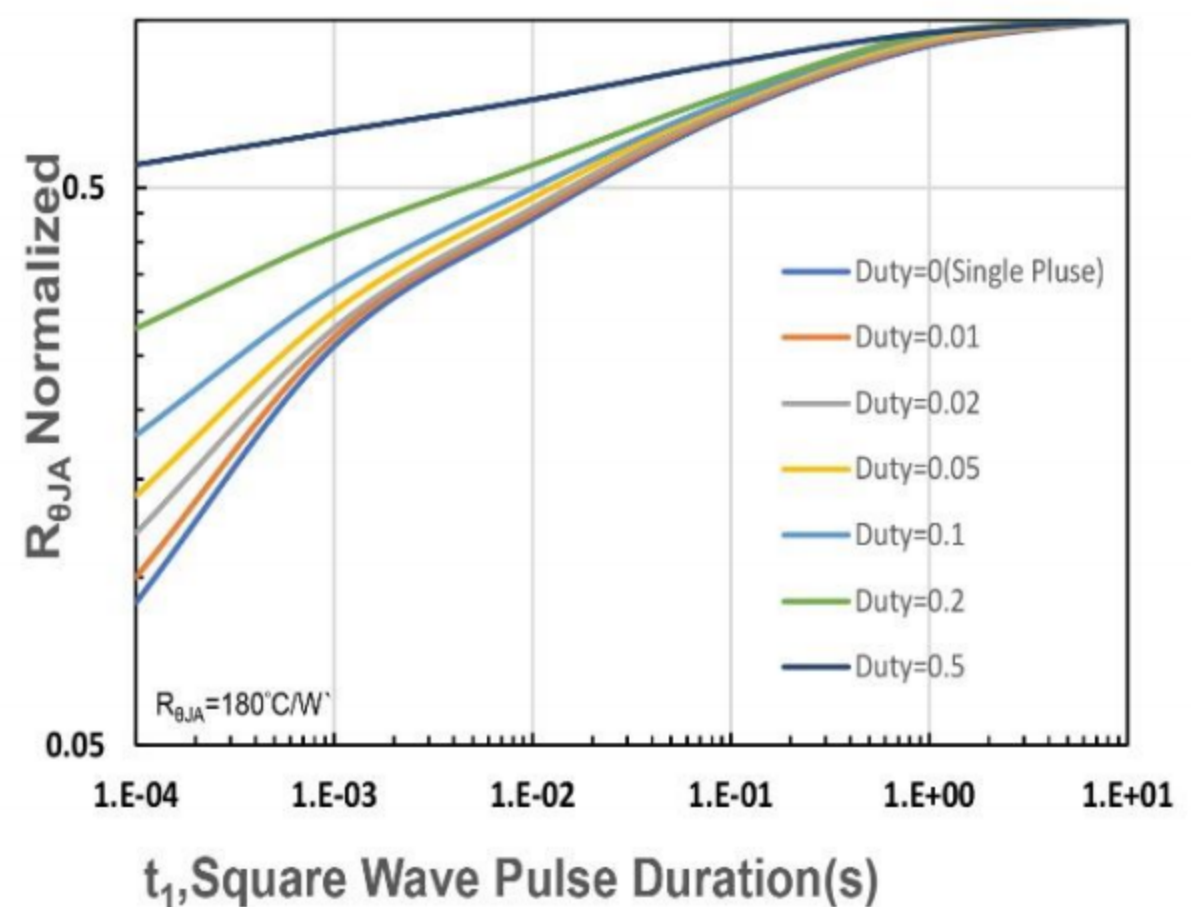
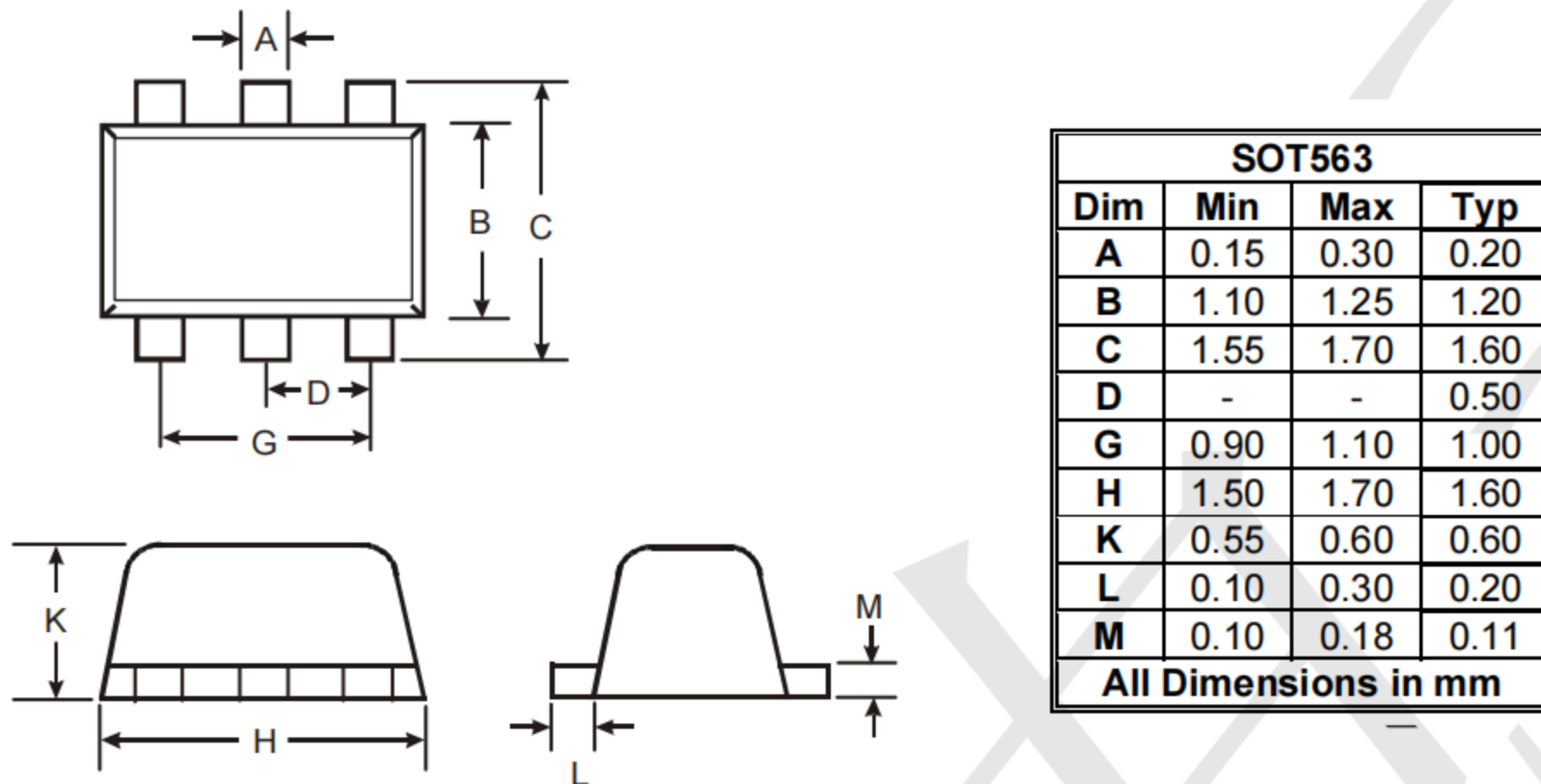
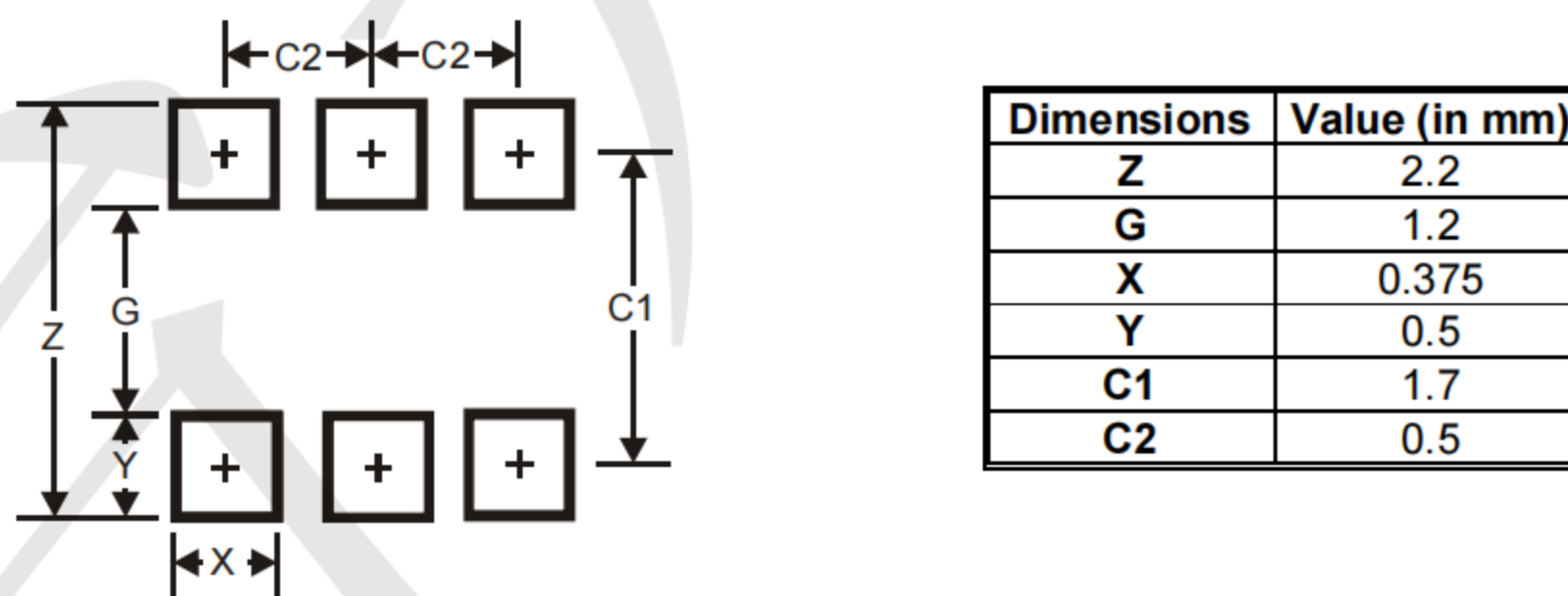


Figure 12. $R_{\theta JA}$ Transient Thermal Impedance

SOT-563 Package Outline Drawing



Suggested Pad Layout



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