



SK02N100T

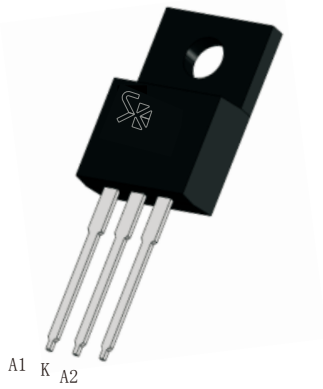
1000V, 2A N-Channel MOSFET

Applications :

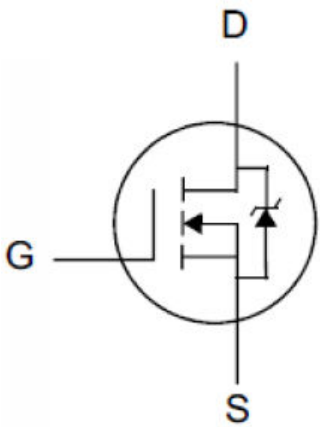
This power MOSFET is usually in various power switching circuit for system miniaturization and higher efficiency such as SMPS, Adaptor, Charger, PFC, Lighting, UPS, Solar and other applications.

FEATURE

- Lowe gate charge
- Lowe C_{rss}

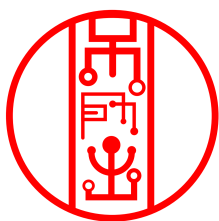


TO-220F



Package No to Scale

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Drain-source breakdown voltage	V_{DSS}	1000	—	—	V	$V_{GS}=0V, I_D=250\mu A$
Continuous drain current	I_D	—	—	2	A	$T_C = 25^{\circ}C$
		—	—	1.2	A	$T_C = 100^{\circ}C$
Pulsed drain current tested	I_{Dm}	—	—	8	A	Repetitive rating; pulse width limited by maximum junction temperature.
Power dissipation	PD	—	—	85	W	$T_C = 25^{\circ}C$
		—	0.68	—	W/ $^{\circ}C$	Derating Factor above $25^{\circ}C$
Gate source voltage	V_{GS}	-30	—	30	V	—
Avalanche energy, single pulse	E_{AS}	—	—	160	mJ	$L=10.0mH$, Start $T_J=25^{\circ}C$
Avalanche Energy ,Repetitive	E_{AR}	—	—	10	mJ	Repetitive rating; pulse width limited by maximum junction temperature.
Avalanche Current	I_{AR}	—	—	2.1	A	Repetitive rating; pulse width limited by maximum junction temperature.
Peak Diode Recovery dv/dt	dv/dt	—	—	5.0	V/ns	$I_{SD} = 2.0A, di/dt \leq 100A/us$, $V_{DD} \leq B_{VDS}$, Start $T_J=25^{\circ}C$
Storage temperature	T_{stg}	-55	—	150	$^{\circ}C$	—
Operating junction temperature	T_J	-55	—	150	$^{\circ}C$	—
Maximum Temperature for Soldering	T_L	—	—	300	$^{\circ}C$	—

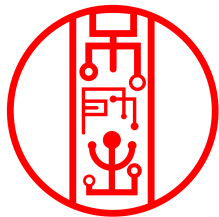


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Symbol	Parameter	Typical	Unit
R _{thJC}	Thermal resistance, junction-case	1.47	°C/W
R _{thJA}	Thermal resistance, junction-ambient	100	°C/W
R _{thJT}	Thermal resistance, junction-ambient for SMD version	—	°C/W
T _{sold}	Soldering temperature, wavesoldering only allowed at	—	°C

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Drain-source breakdown voltage	V _{DSS}	1000	—	—	V	V _{GS} =0V I _D =250μA
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} =1000V, T _J =25°C, V _{GS} =0V
		—	—	250		V _{DS} =800V, T _J =125°C, V _{GS} =0V
Gate-source leakage current	I _{GSS}	—	—	±100	nA	V _{GS} = ±30V, V _{DS} = 0V
Gate threshold voltage	V _{GS(th)}	2.0	3.0	4.0	V	V _{DS} = V _{GS} , I _D = 250μA
Drain-source on-state resistance	R _{DS(on)}	—	7.8	8.8	Ω	V _{GS} = 10V, I _D = 1A
	R _{DS(on)}	—	—	—	Ω	V _{GS} = 4.5V, I _D = 1A
Gate resistance	R _G	—	—	—	Ω	f=1MHz

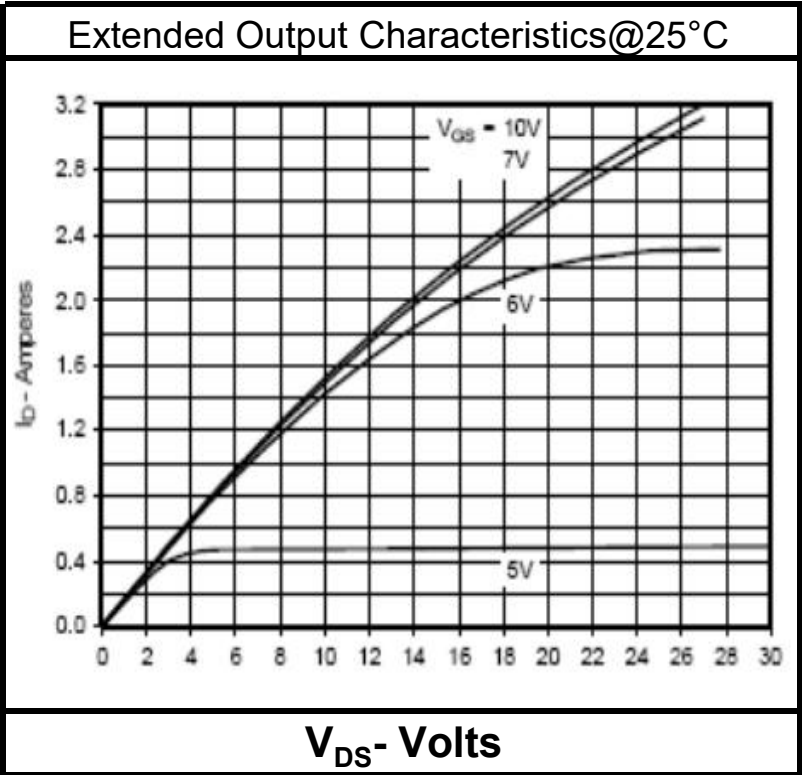
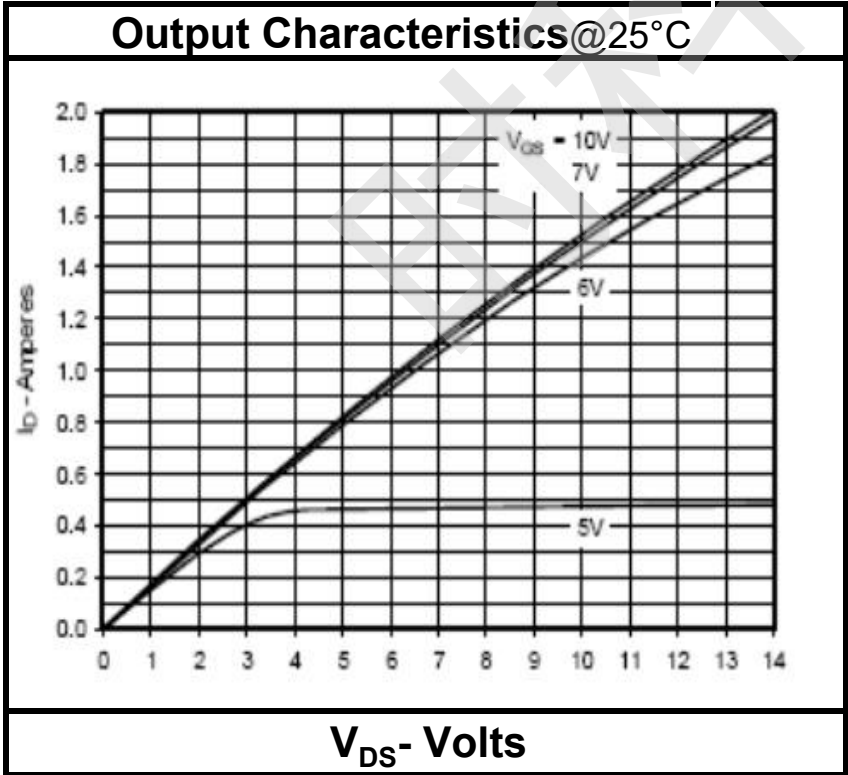
Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Input capacitance	C _{iss}	—	380	—	pF	V _{DS} = 25V, f = 1MHz, V _{GS} = 0V
Output capacitance	C _{oss}	—	40	—	pF	
Reverse transfer capacitance	C _{rss}	—	4	—	pF	
Turn-on delay time	t _{d(on)}	—	8	—	nS	V _{DD} = 500V, I _D = 2A, R _G =12Ω V _{GS} = 10V
Rise time	t _r	—	6	—	nS	
Turn-off delay time	t _{d(off)}	—	36	—	nS	
Fall time	t _f	—	15	—	nS	



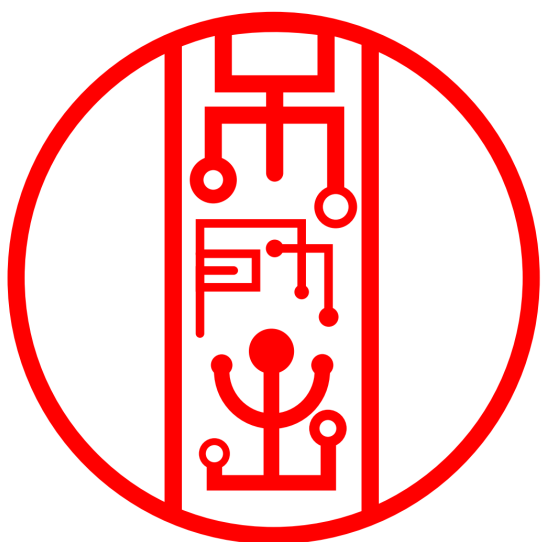
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Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Forward Transconductance	g_{fs}	—	2.1	—	S	$V_{DS}=15V, I_D=2.0A$
Gate to source charge	Q_{gs}	—	2.1	—	nC	$V_{DS}=500V, I_D=2A,$ $V_{GS}=10V$
Gate to drain charge	Q_{gd}	—	6	—	nC	
Gate charge total	$Q_g @ 10V$	—	15	—	nC	
	$Q_g @ 4.5V$	—	—	—	nC	

Parameter	Symbol	Values			Unit	Condition
		Min	Typ	Max		
Continuous Source Current (Body Diode)	I_S	—	—	2	A	—
Maximum Pulsed Source Current (Body Diode)	I_{SM}	—	—	8	A	—
Diode forward on-voltage	V_{sd}	—	—	1.5	V	$I_S=2A, V_{GS}=0V, T_J=25^{\circ}C$
Reverse recovery time	t_{rr}	—	500	—	nS	$I_S=2.0A, T_J=25^{\circ}C$
Reverse recovery charge	Q_{rr}	—	1.2	—	μC	$dI_F/dt=100A/us, V_{GS}=0V$

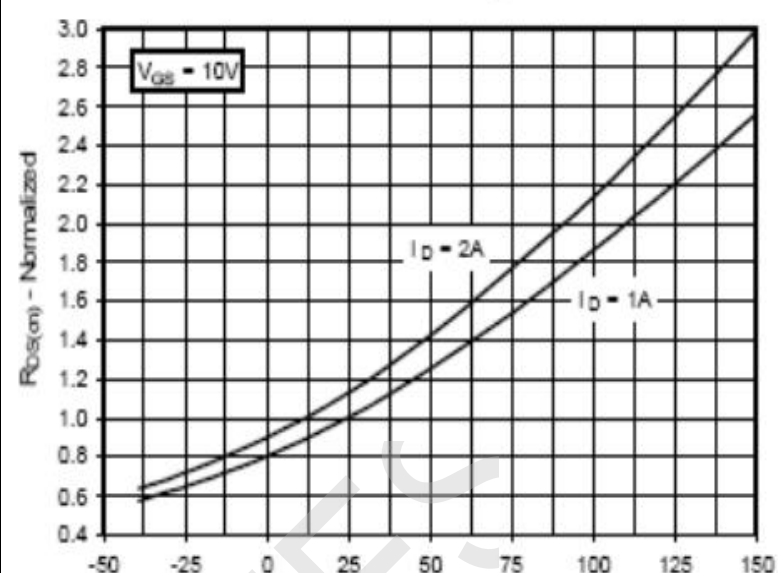


Output Characteristics@125°C



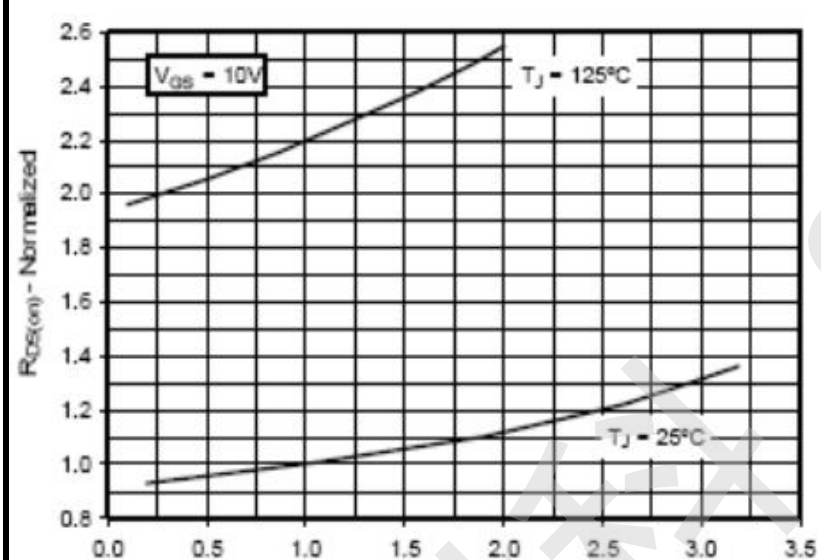
V_{DS} - Volts

$R_{DS(on)}$ Normalized to $I_D=1A$ Value VS.Junction Temperature



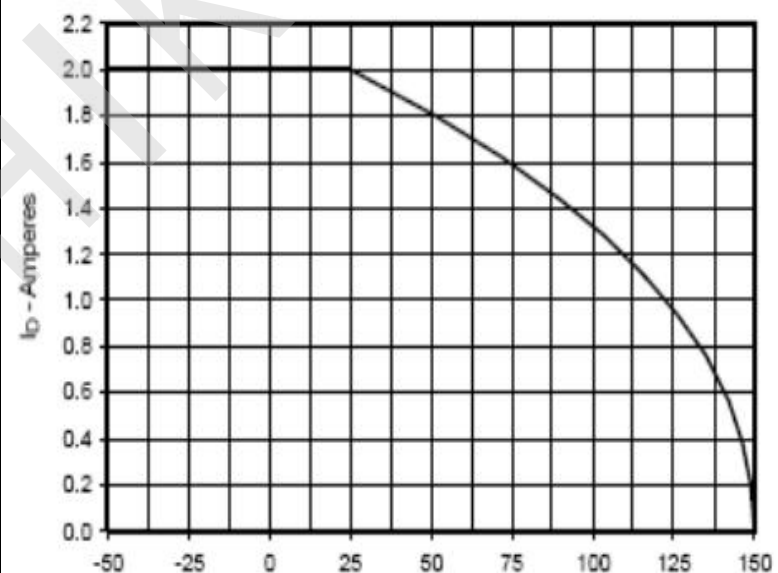
T_J -Degrees Centigrade

$R_{DS(on)}$ Normalized to $I_D=1A$ Value VS.Drain Current



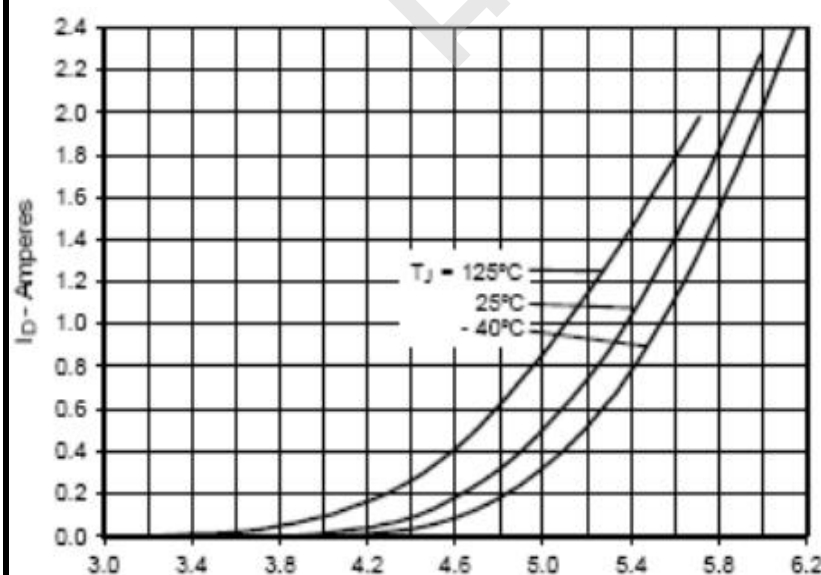
I_D -Amperes

Maximum Drain Current vs. Case Temperature



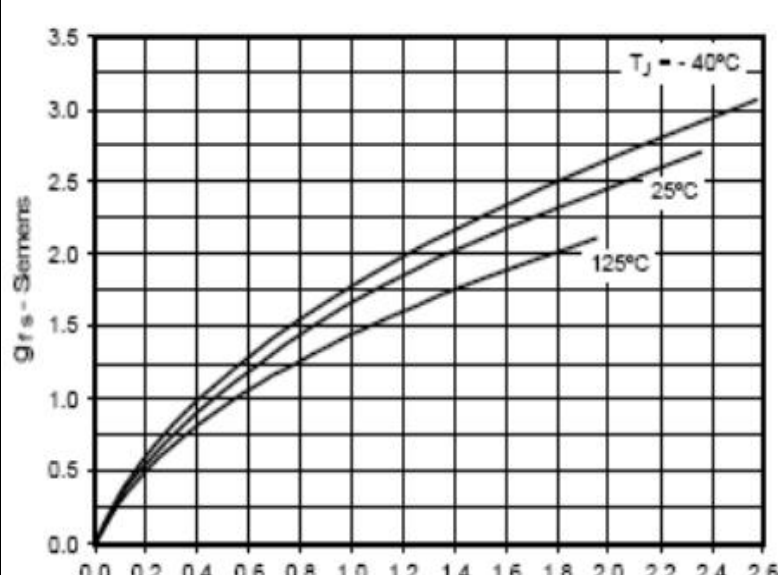
T_C -Degrees Centigrade

Input-Admittance



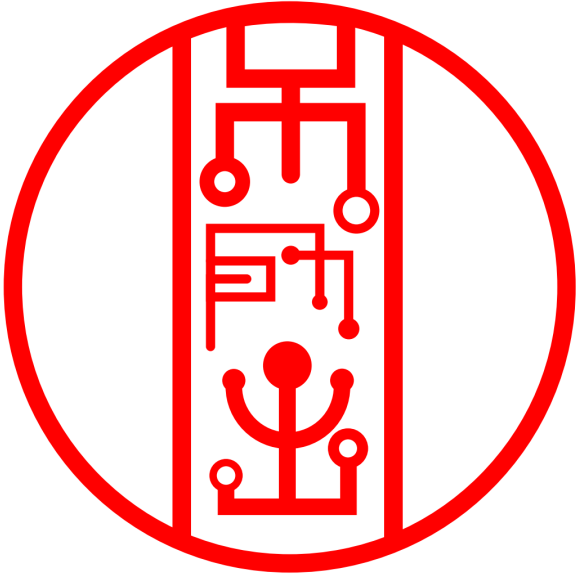
V_{GS} - Volts

Transconductance



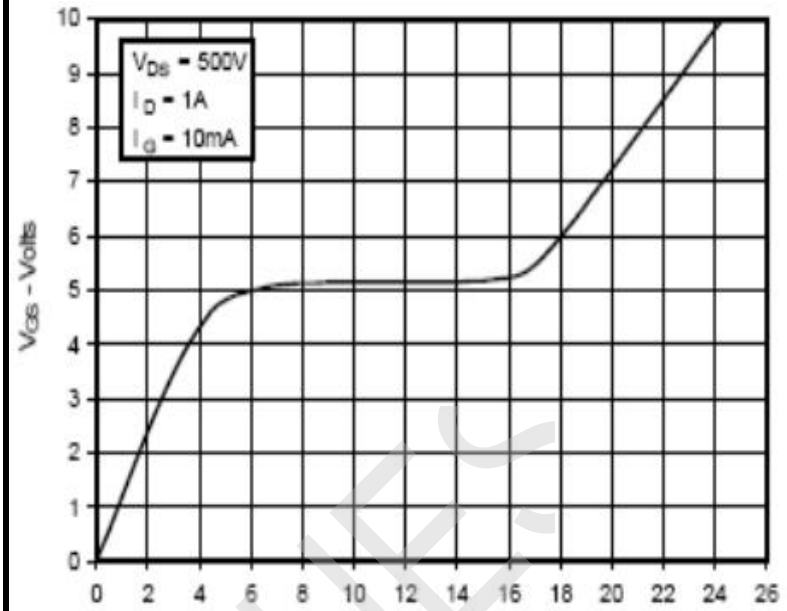
I_D -Amperes

Forward voltage Drop of Intrinsic Diode



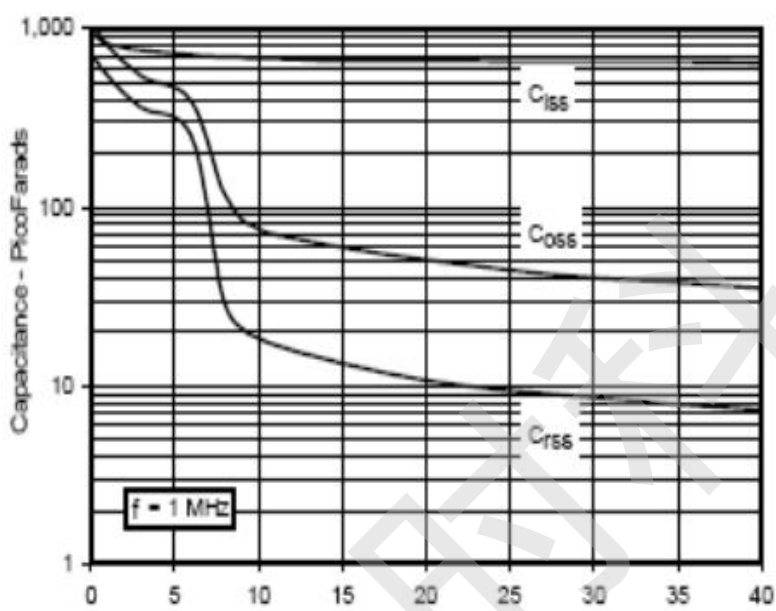
V_{DS} - Volts

Gate Charge



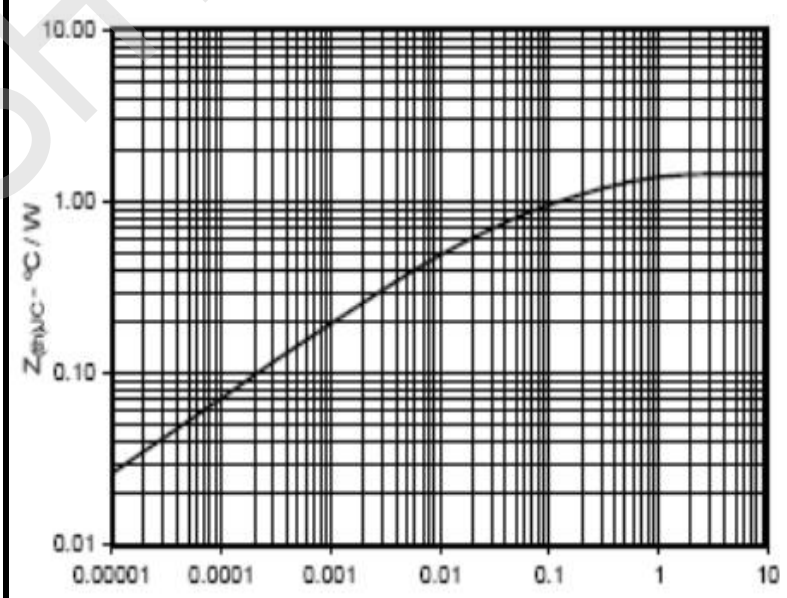
Q_G -NanoCoulombs

Capacitance



V_{DS} - Volts

Maximum Transient Thermal Impedance



Pulse Width-Seconds

Test Circuit and Waveform

