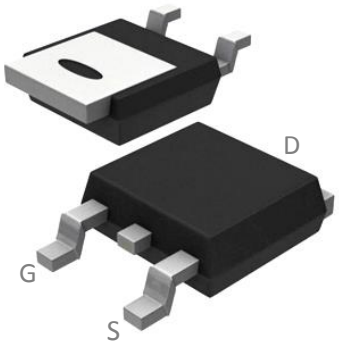
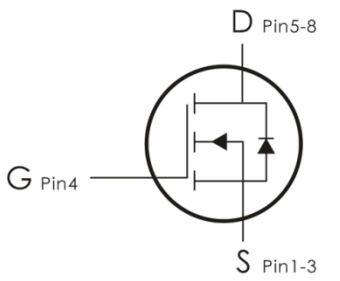
Description：

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

It can be used in a wide variety of applications.





Features：

1) V_{DS}=30V,I_D=80A,$R_{DS(ON)}$<2.5mΩ @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current,Package Limited-T_C=25℃	80	A
	Continuous Drain Current,Package Limited-T_C=100℃	73	
	Continuous Drain Current,Silicon- T_C=25℃	163	
I_{DM}	Pulsed Drain Current(Note2)	240	
E_{AS}	Avalanche Energy, Single Pulse (Note 3)	160	mJ
I_{AR}	Avalanche Current, Repetitive (Note 2)	20	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃
T_{LEAD}	Lead Temperature (Soldering, 10 sec)	260	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
R_{thJC}	Thermal Resistance,Junction to Case	1.85	℃/W

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

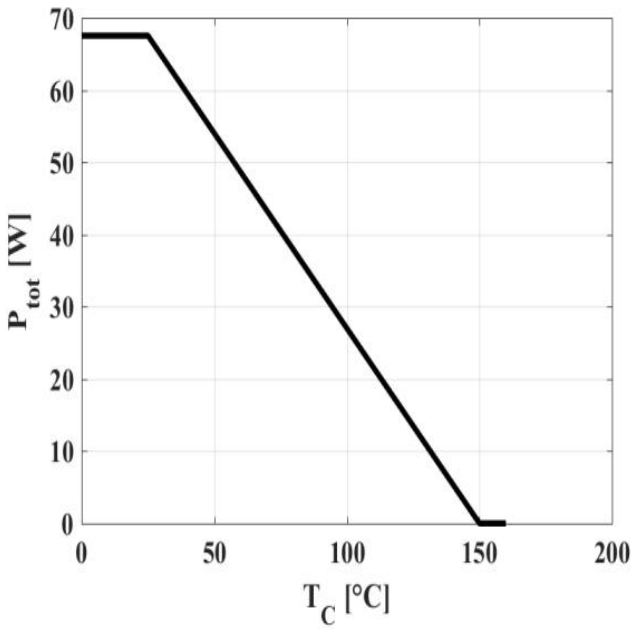
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=0.25mA	1.2	1.7	2.1	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=20A	---	2.2	2.5	mΩ
		V_{GS}=4.5V,I_D=20A		3.1	3.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	2.5	---	nF
C_{oss}	Output Capacitance		---	580	---	pF
C_{rss}	Reverse Transfer Capacitance		---	114	---	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V R_G=1.6Ω， I_D=20A	---	11	---	ns
t_r	Rise Time		---	8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	46	---	ns
t_f	Fall Time		---	8	---	ns

Q_g	Gate Charge Total	V_{GS}=0 to10V, V_{DD}=15V, I_D=20A	---	38.6	---	nC
Q_{gs}	Gate-Source Charge		---	5.3	---	nC
Q_{gd}	Gate-Drain Charge		---	5	---	nC
$V_{plateau}$	Gate Plateau Voltage		---	2.8	---	V
Drain-Source Diode Characteristics						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Units**
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_{SD}=20A	---	0.79	1.1	V
trr	Reverse Recovery Time	V_R=15V,I_F=20A dI$_F$/dt=100A/us	---	25	---	ns
qrr	Reverse Recovery Charge		---	50	---	nC

Notes:

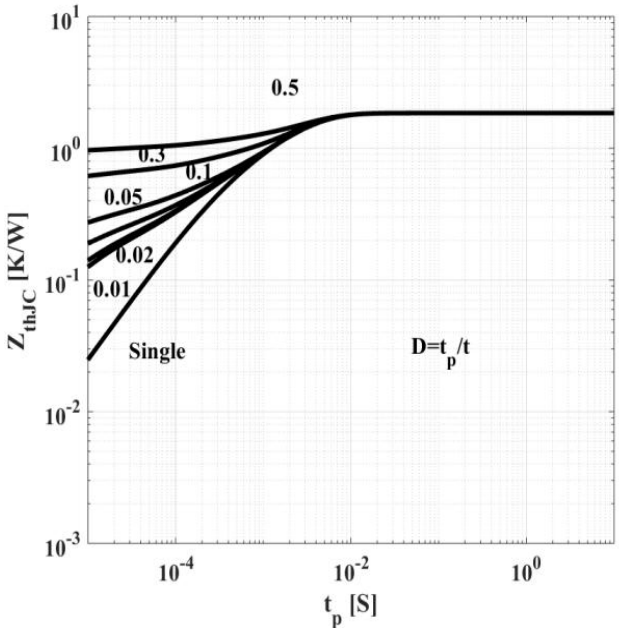
1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. I_{AS} = 20.0A, V_{DD} = 15V, R_G = 25Ω, Starting T_J = 25°C

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



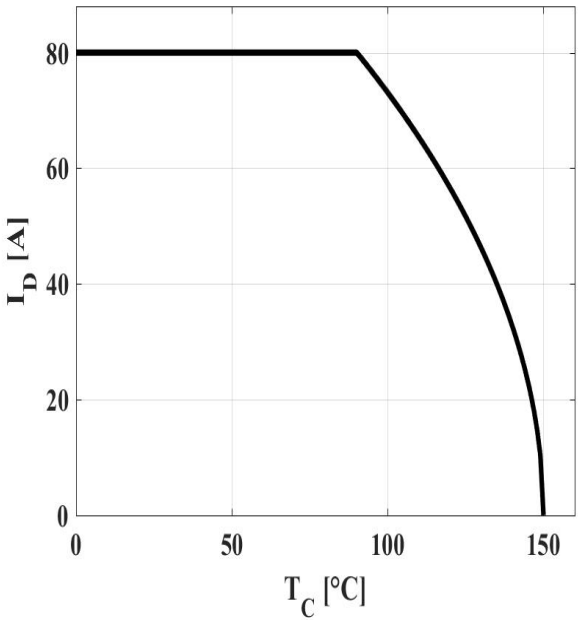
$P_{tot} = f(T_c)$

Figure 1: Power Dissipation



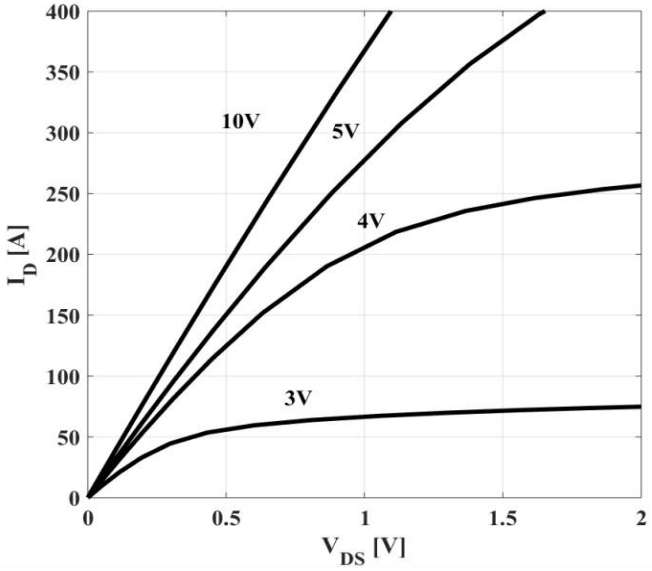
$Z(_{thJC}) = f(t_p)$; parameter: $D = t_p/T$

Figure 2: Max. Transient Thermal Impedance



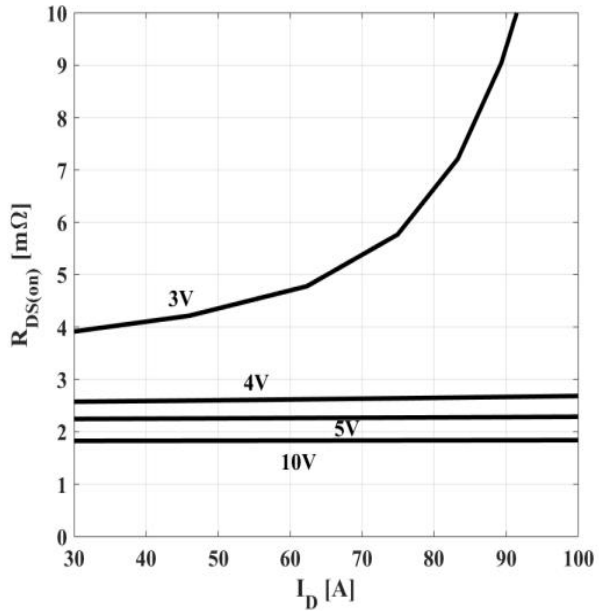
$I_D = f(T_C)$; $V_{GS} \geq 10V$

Figure 3: Drain Current



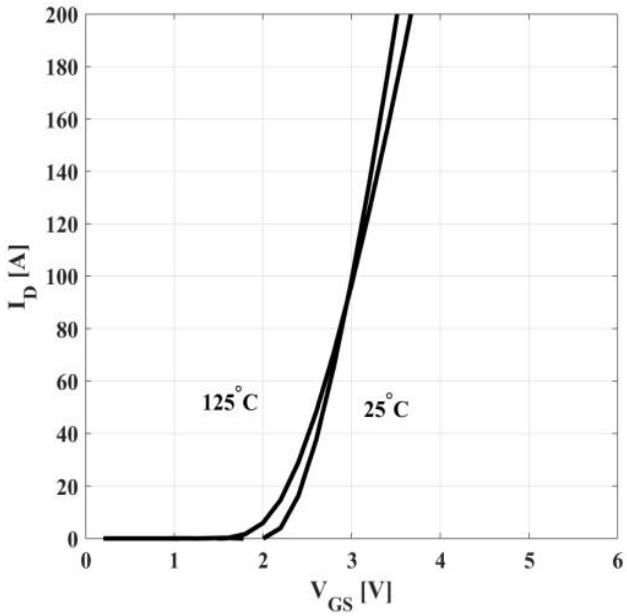
$I_D = f(V_{DS})$; Tj= 25ºC; parameter: V_{GS}

Figure 4: Typ. Output Characteristics



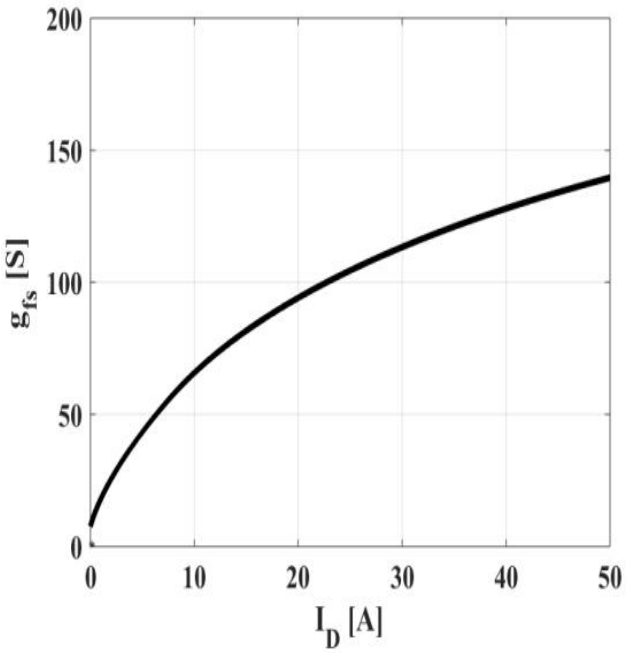
$R_{DS(ON)} = f(I_D)$; T_j=25ºC; parameter: V_{GS}

Figure 5: Typ. Drain-Source On-State Resistance



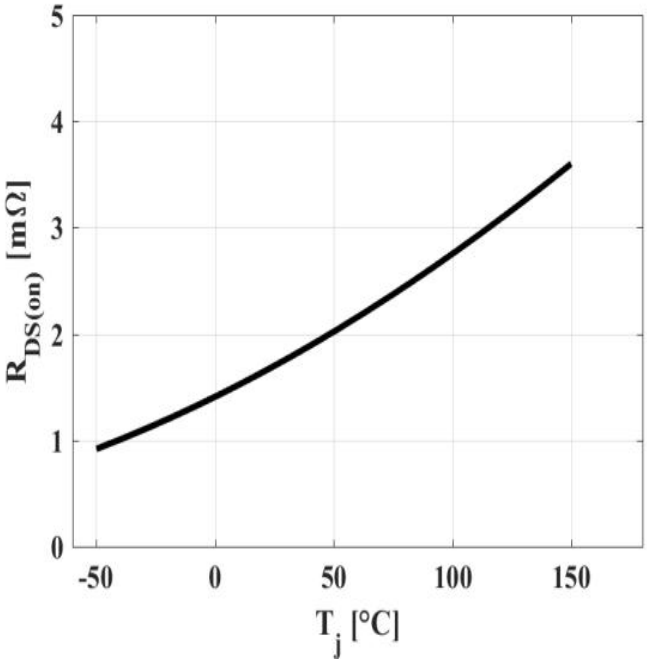
$I_D = f(V_{GS})$; $|V_{DS}| > 2|I_D|R_{DS(on)max}$; parameter: T_j

Figure 6: Typ. Transfer Characteristics



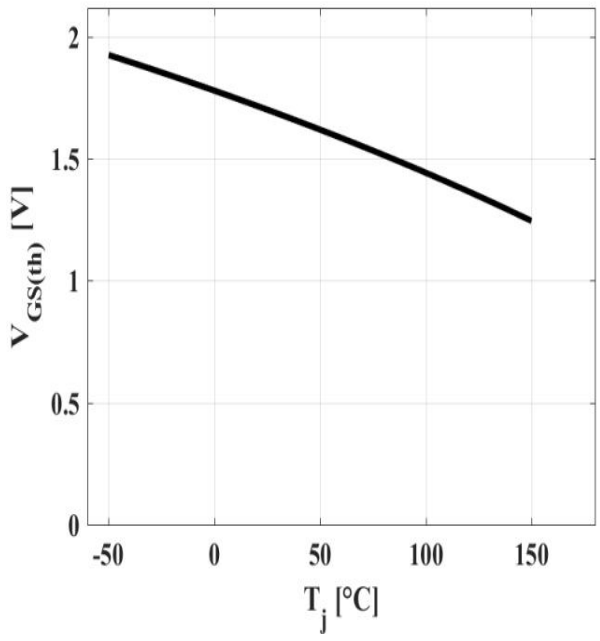
$g_{fs}=f(I_D)$; $T_j=25℃$

Figure 7: Typ. Forward Transconductance



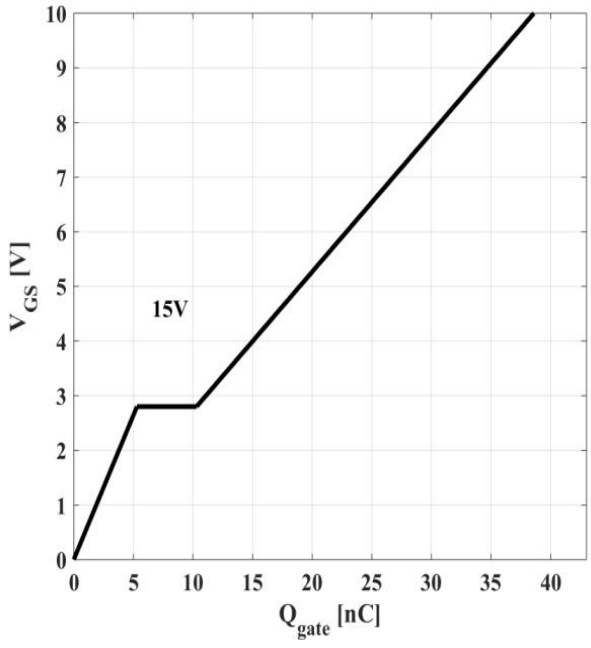
$R_{DS(ON)}=f(T_j)$; $I_D=20A$; $V_{GS}=10V$

Figure 8 : Typ. Drain-Source On-State Resistance



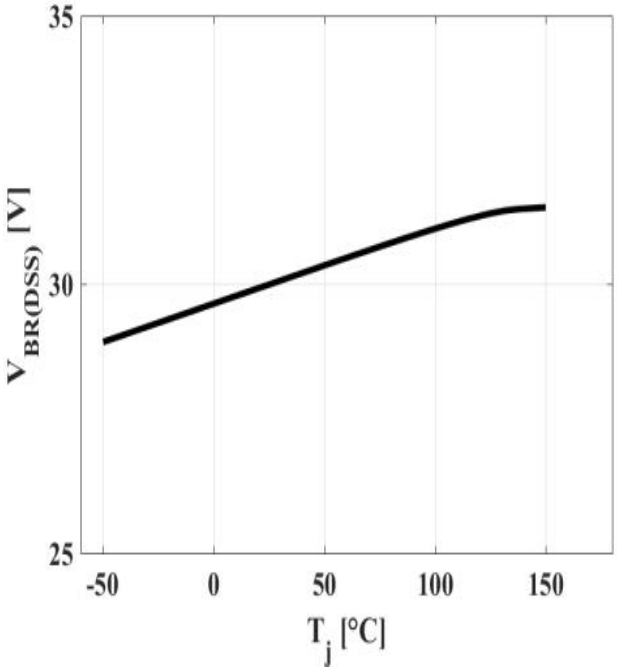
$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; $I_{DS}=250\mu A$

Figure 9 : Typ. Gate Threshold Voltage



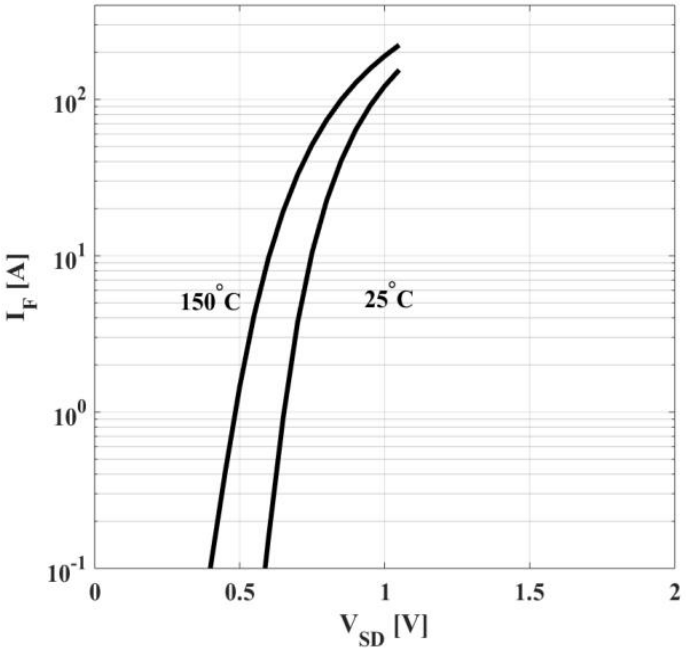
$V_{GS}= f(Q_{gate})$, $I_D= 20A$ pulsed

Figure 10: Typ. Gate Charge



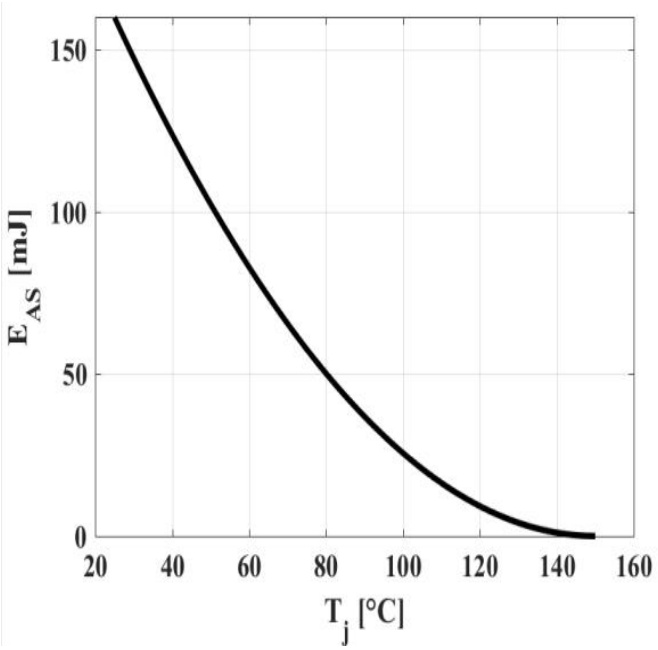
$V_{BR(DSS)}$=f(T_j); I_D=1mA

Figure 11: Drain-Source Breakdown Voltage



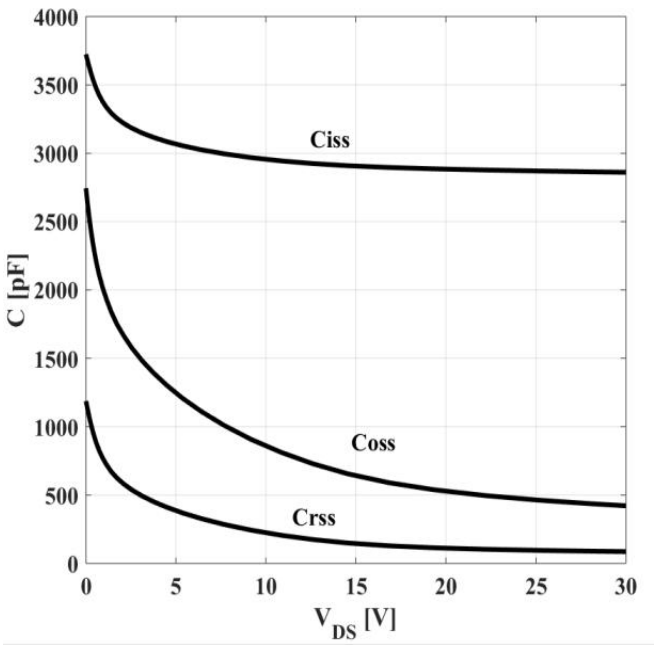
I_F=f(V_{SD}); parameter: T_j

Figure 12: Forward Characteristics of Reverse Diode



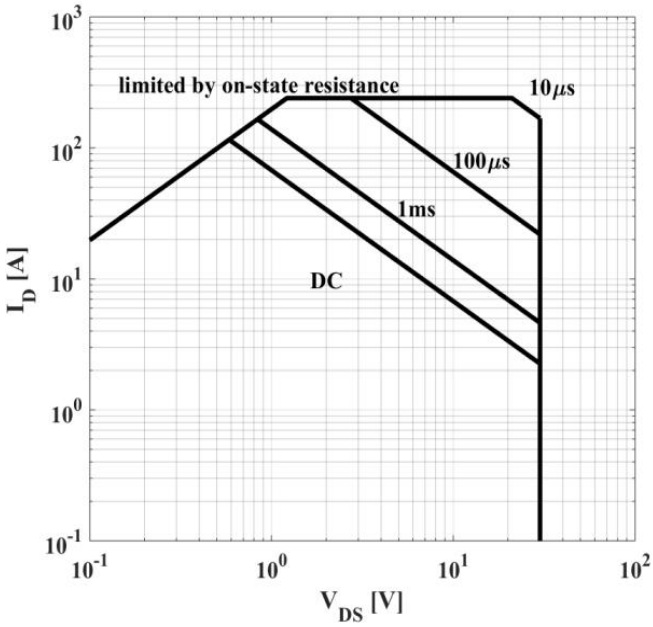
E_{AS}=f(T_j); I_D=20.0A; V_{DD}=15V

Figure 13: Avalanche Energy



C=f V_{DS} ; V_{GS}=0; f=1MHz

Figure 14: Typ. Capacitances



$I_D=f(V_{DS})$; $T_C=25ºC$; $V_{GS}>7V$; parameter: t_p

Figure 15: Safe Operating Area