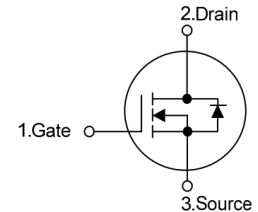
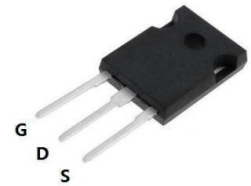


N-CHANNEL SiC POWER MOSFET

Features

- $R_{DS(on)}=80m\Omega(Typ.) @V_{GS}=20V, I_D=20A$
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive



Applications

- Power supplies
- DC/DC converters
- Motor drives
- Pulsed Power applications

Key Performance and Package Parameters

Order codes	V_{DS}	I_D	$R_{DS(ON)}$, Typ	T_{vjmax}	Marking	Package
XD080B120BV1S3	1200V	36A	0.08 Ω	150 $^{\circ}C$	D080B120BV1	TO247

Absolute Maximum Ratings ($T_c= 25^{\circ}C$ unless otherwise specified.)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	1200	V
V_{GSmax}	Gate-Source Voltage	-10/+25	V
V_{GSop}	Gate-Source Voltage	-5/+20	V
I_D	Continuous Drain Current ($T_c=25^{\circ}C$)	36	A
I_{DM}	Pulsed Drain Current	80	A
P_D	Maximum Power Dissipation ($T_c=25^{\circ}C$)	208	W
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$

Thermal Data

Symbol	Parameter	Conditions	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Steady State)	TO247	0.6	$^{\circ}C/W$

Electrical Characteristics ($T_c=25^{\circ}\text{C}$ unless otherwise specified.)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=100\mu A$	1200	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=1200V, V_{GS}=0V$	---	1	100	μA
I_{GSS}	Gate Leakage Current, Forward	$V_{GS}=25V, V_{DS}=0V$	---	1	250	nA
	Gate Leakage Current, Reverse	$V_{GS}=-10V, V_{DS}=0V$	---	---	250	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=5mA$	2.0	2.4	4.0	V
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=20V, I_{DS}=20A$	--	80	98	$m\Omega$
Q_g	Total Gate Charge	$V_{DS}=800V$	---	80	---	nC
Q_{gs}	Gate-Source Charge	$V_{GS}=-5V/20V$	---	23	---	nC
Q_{gd}	Gate-Drain Charge	$I_{DS}=20A$	---	15	---	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=800V,$	---	9	---	ns
t_r	Rise Time	$V_{GS}=-5V/20V$	---	9.5	--	ns
$t_{d(off)}$	Turn-off Delay Time	$I_{DS}=20A, R_G=2.5\Omega$	---	18	---	ns
t_f	Fall Time		---	7.5	---	ns
C_{iss}	Input Capacitance	$V_{DS}=1000V$	---	1470	---	pF
C_{oss}	Output Capacitance	$V_{GS}=0V$	---	95	---	pF
C_{rss}	Reverse Transfer Capacitance	$f=1MHz$	---	11	---	pF

Reverse Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{SD}	Diode Forward Voltage	$I_{SD}=10A, V_{GS}=-5V$	3.6	---	---	V
t_{rr}	Diode Reverse Recovery Time	$V_R=800V,$ $I_{SD}=20A,$ $di_f/dt=1000A/s$	---	35	---	ns
Q_{rr}	Diode Reverse Recovery Charge		---	90	---	nC
I_{rrm}	Peak Reverse Recovery Current		---	4.5	---	A

Typical Characteristics

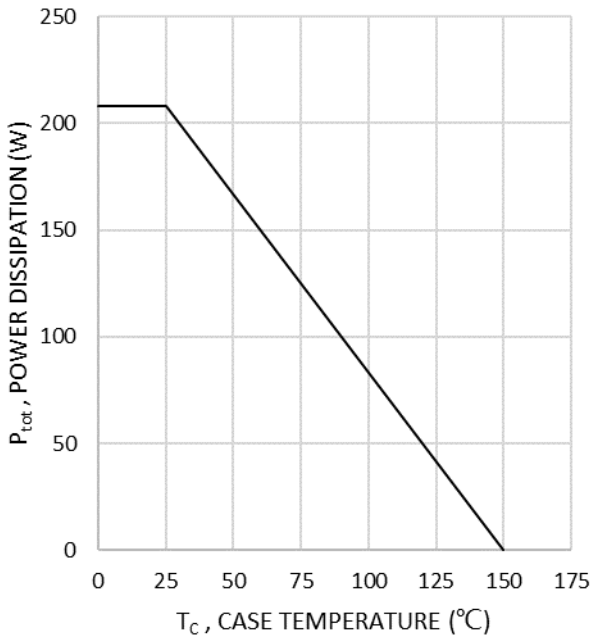


Fig.1 Power Dissipation

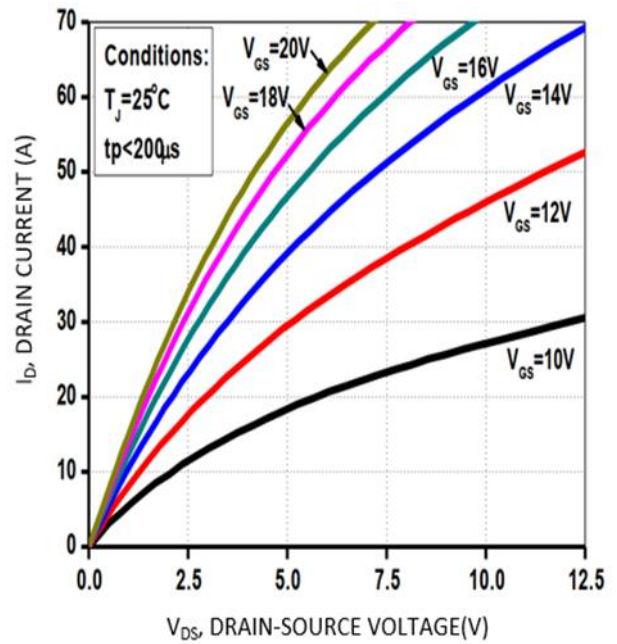


Fig.2 Output Characteristics

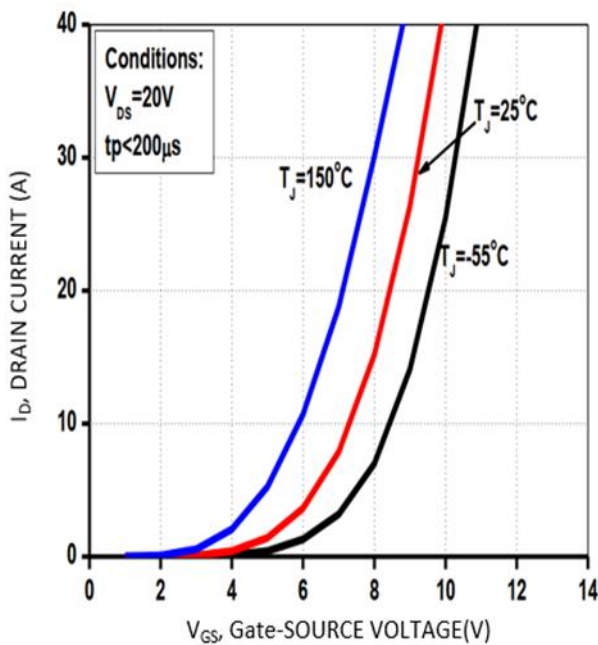


Fig.3 Output Characteristics

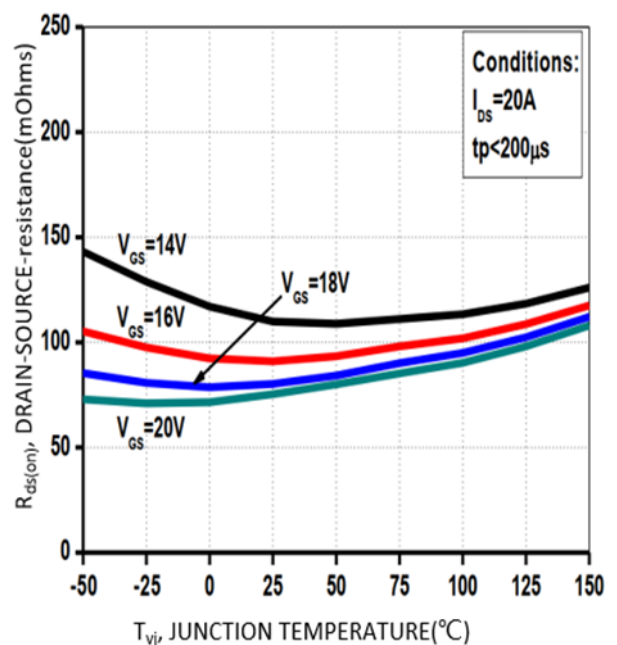


Fig.4 Drain-Source On Resistance

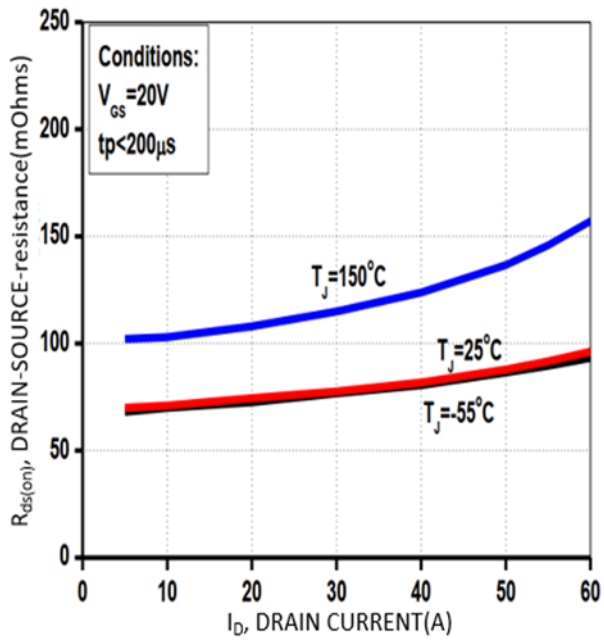


Fig.5 Drain-Source On Resistance

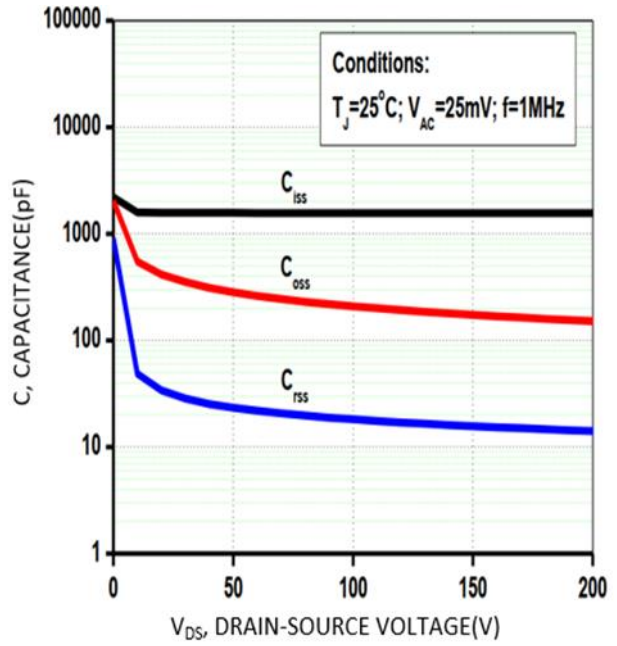


Fig.6 Capacitance

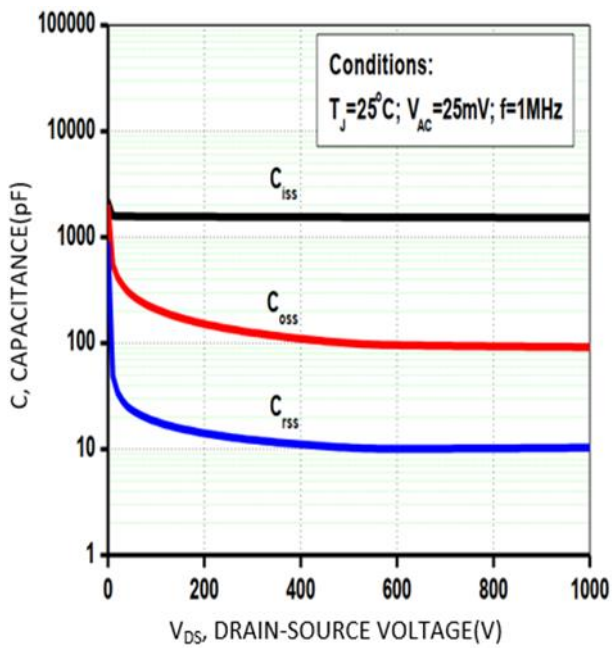
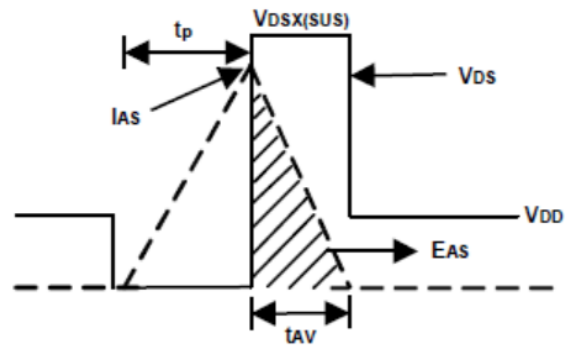
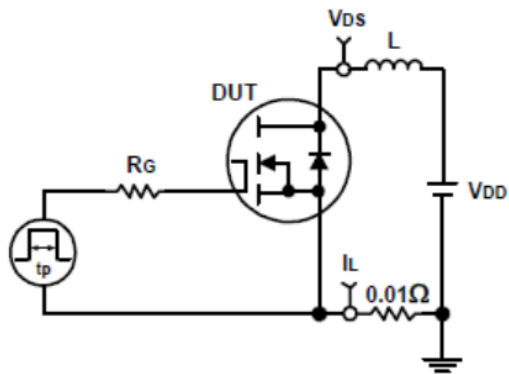


Fig.7 Capacitance

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

