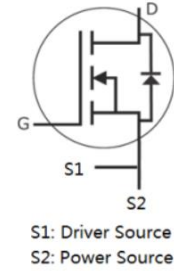


N-CHANNEL SiC POWER MOSFET

Features

- $R_{DS(on)}=60m\Omega$ (Typ.) @ $V_{GS}=20V, I_D=29A$
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive



Applications

- Solar inverters
- DC/DC converters
- Motor drives
- Switch Mode Power Supplies

Key Performance and Package Parameters

Order codes	V_{DS}	I_D	$R_{DS(ON)}$, Typ	T_{vjmax}	Marking	Package
XD060B065BV1S5	650V	29A	60m Ω	175 $^{\circ}C$	D60B65BV1	TO247-4

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

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	650	V
V_{GSmax}	Absolute maximum Gate-Source Voltage	-8/+22	V
V_{GSop}	Recommended operational Gate-Source Voltage	-4/+18	V
I_D	Continuous Drain Current ($T_c=25^{\circ}C$)	29	A
I_{DM}	Pulsed Drain Current	99	A
P_D	Maximum Power Dissipation ($T_c=25^{\circ}C$)	150	W
T_J	Operating Junction Temperature Range	-40 to 175	$^{\circ}C$
T_{STG}	Storage Temperature Range	-40 to 175	$^{\circ}C$

Thermal Data

Symbol	Parameter	Conditions	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Steady State)	TO247-4	0.99	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=100\mu A$	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=650V, V_{GS}=0V$	---	1	50	μA
I_{GSS}	Gate Leakage Current, Forward	$V_{GS}=18V, V_{DS}=0V$	---	10	250	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=5mA$	1.8	2.6	4.0	V
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=18V, I_{DS}=13.2A$	42	60	79	$m\Omega$
Q_g	Total Gate Charge	$V_{DS}=400V$	---	50	---	nC
Q_{gs}	Gate-Source Charge	$V_{GS}=-4V/18V$	---	13	---	nC
Q_{gd}	Gate-Drain Charge	$I_{DS}=13.2A$	---	12	---	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=400V,$	---	8	---	ns
t_r	Rise Time	$V_{GS}=-4V/18V$	---	9	--	ns
$t_{d(off)}$	Turn-off Delay Time	$I_{DS}=13.2A, R_G=2.5\Omega$	---	21	---	ns
t_f	Fall Time		---	8	---	ns
C_{iss}	Input Capacitance	$V_{DS}=600V$	---	830	---	pF
C_{oss}	Output Capacitance	$V_{GS}=0V$	---	82	---	pF
C_{rss}	Reverse Transfer Capacitance	$f=1MHz$	---	14	---	pF

Reverse Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{SD}	Diode Forward Voltage	$I_{SD}=6.6A, V_{GS}=-4V$	---	4.2	---	V
t_{rr}	Diode Reverse Recovery Time	$V_R=400V,$ $I_{SD}=13.2A,$ $di_f/dt=1000A/s$	---	28	---	ns
Q_{rr}	Diode Reverse Recovery Charge		---	47	---	nC
I_{rrm}	Peak Reverse Recovery Current		---	3	---	A

Typical Characteristics

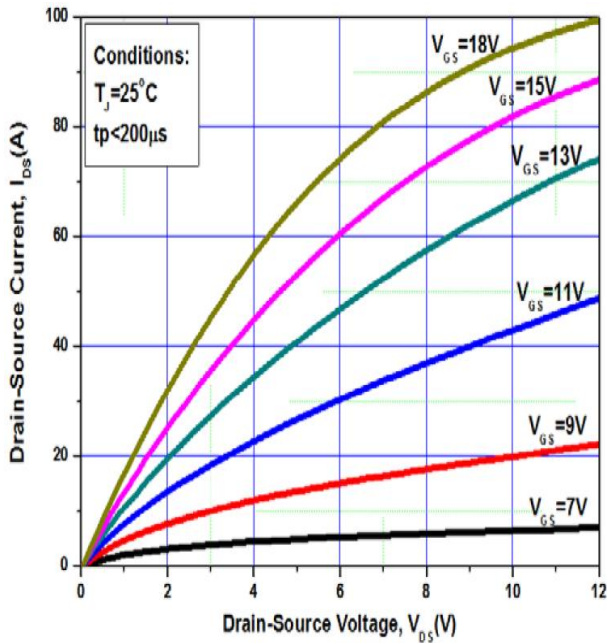


Fig.1 Output Characteristics

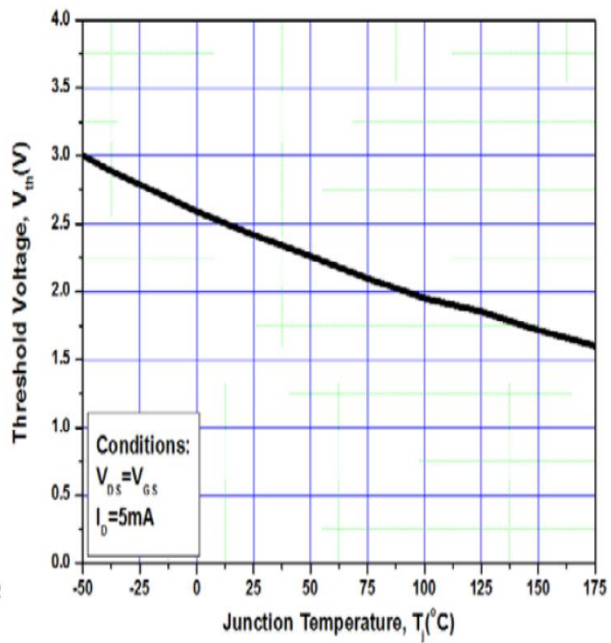


Fig.2 Threshold Voltage

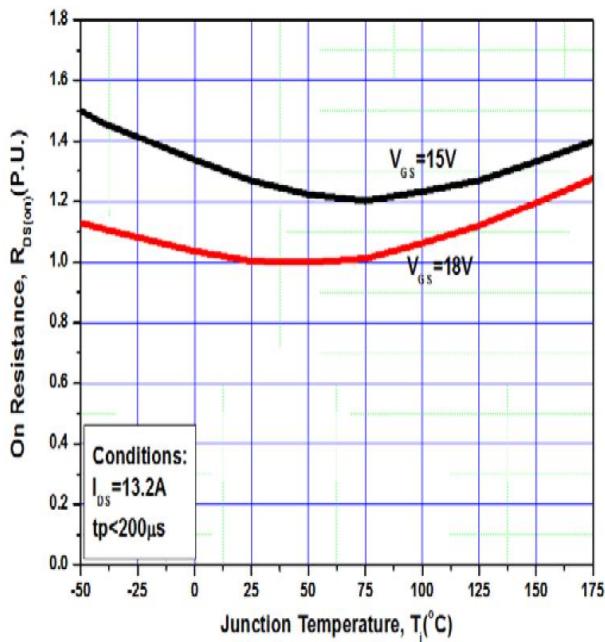


Fig.3 Drain-Source On Resistance

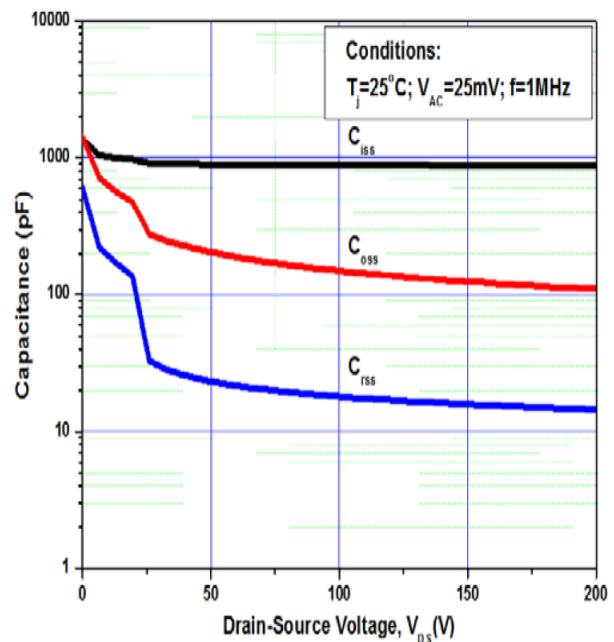


Fig.4 Capacitance

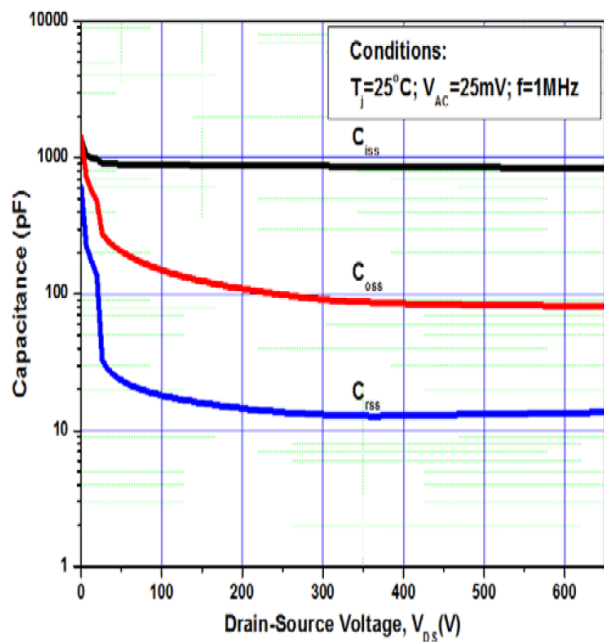
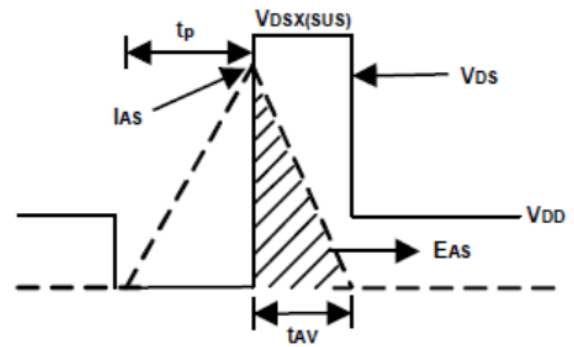
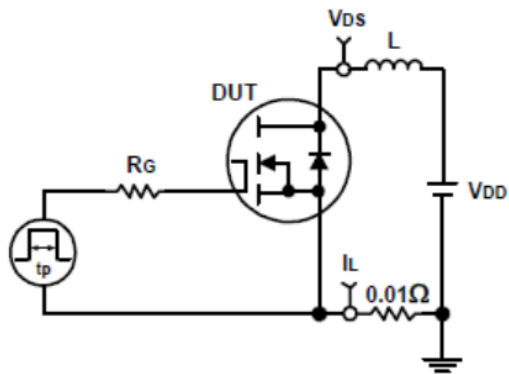
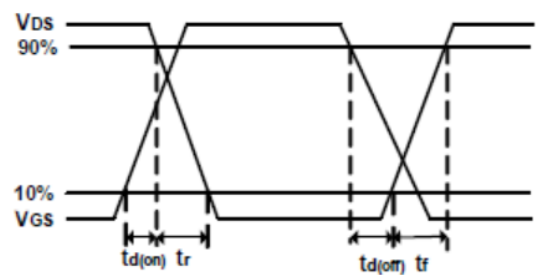
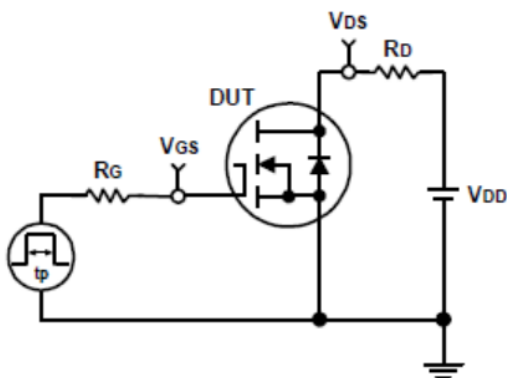


Fig.5 Capacitance

Avalanche Test Circuit and Waveforms

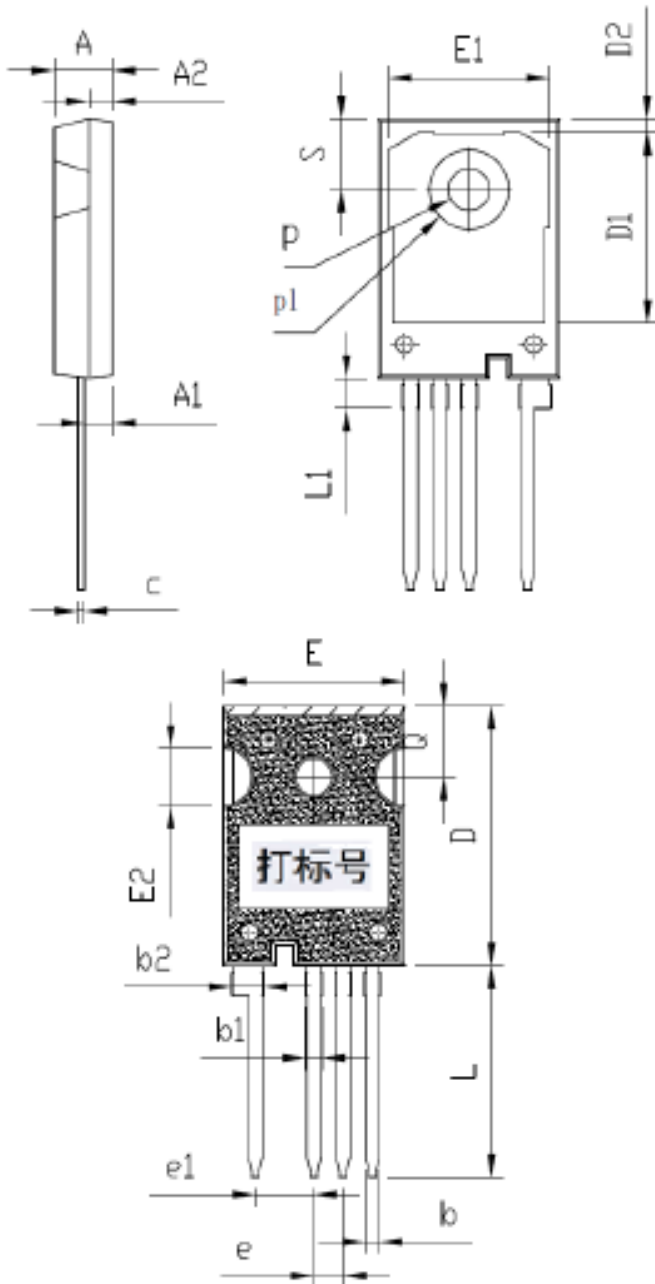


Switching Time Test Circuit and Waveforms



Package Information

TO-247-4



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A		5.00	
A1		2.40	
A2		2.00	
b		1.20	
b1		1.30	
b2		2.65	
c		0.6	
D		22.54	
D1		16.50	
D2		1.17	
e		2.54	
e1		5.08	
E		15.80	
E1		14.00	
E2		5.00	
L		18.38	
L1		2.58	
p		3.60	
p1		6.80	
Q		6.15	
S		6.15	