

N-Ch SiC Power MOSFET

TO-247-4L

$V_{DS}=1200V$

$I_D=100A$ ($T_J=25^\circ C$)

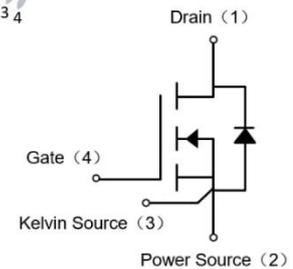
$R_{DSon}=18m\Omega$ ($V_{GS}=18V, T_J=25^\circ C$)

Features:

- Low On-Resistance with High Blocking Voltage
- High Speed Switching with Low Capacitance
- Avalanche Ruggedness
- Halogen Free, Rohs Compliant

Benefits:

- High Switching Frequency Operation
- High System Efficiency
- Increased Power Density
- Reduction of Heat Sink Requirements



Applications:

- Switch Mode Power Supplies (SMPS)
- Pulsed Power applications
- Motor Drivers & Battery Chargers
- High Voltage DC/DC Converter

Maximum Rated Valued of MOSFET

Drain-source voltage	V_{DSS}		1200	V
Recommend Gate-Source Voltage	V_{GSop}		-5/18	V
Gate-Source Voltage	V_{GSmax}		-10/22	V
Continuous drain current	I_D	$T_c=100^\circ C, V_{GS}=18V$	85	A
		$T_c=25^\circ C, V_{GS}=18V$	100	
Operating Junction Temperature	T_j		-55~175	$^\circ C$
Storage Temperature	T_{stg}		-55~175	$^\circ C$

Electrical Characteristics of MOSFET

				Min.	Typ.	Max.	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	$I_D=100\mu A, V_{GS}=0V$	$T_J=25^\circ C$	1200	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$I_D=20mA, V_{DS}=V_{GS}$	$T_J=25^\circ C$	2.2	3.2	4.2	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=1200V, V_{GS}=0V$	$T_J=25^\circ C$	-	10	100	μA
Gate-Source leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=22V$	$T_J=25^\circ C$	-	-	100	nA
Drain-Source On-State resistance	$R_{DS(ON)}$	$V_{GS}=18V, I_D=60A$	$T_J=25^\circ C$	-	18	22	m Ω
			$T_J=175^\circ C$	-	32	-	m Ω
Internal gate resistor	R_{Gint}	$f=1MHz, V_{AC}=25mV$	$T_J=25^\circ C$	-	1.2	-	Ω
Input capacitance	C_{iss}	$f=1MHz, V_{DS}=1000V, V_{AC}=25mV, V_{GS}=0V$	$T_J=25^\circ C$	-	4500	-	pF
Output capacitance	C_{oss}			-	160	-	pF
Reverse transfer capacitance	C_{rss}			-	10	-	pF
Gate to source charge	Q_{GS}	$V_{DS}=800V$	$T_J=25^\circ C$	-	45	-	nC
Gate to drain charge	Q_{GD}	$I_{DS}=60A$		-	55	-	nC
Total gate charge	Q_G	$V_{GS}=-5V/18V$		-	170	-	nC
Turn-on energy loss per pulse	E_{on}	$V_{DS}=800V, I_{DS}=60A,$	$T_J=25^\circ C$	-	1600	-	μJ
Turn-off energy loss per pulse	E_{off}	$R_{G-ext}=5\Omega, V_{GS}=-5V/18V,$	$T_J=25^\circ C$	-	600	-	μJ

Characteristics of Body Diode

				Min.	Typ.	Max.	
Forward voltage	V_{SD}	$I_{SD}=60A, V_{GS}=-5V$	$T_J=25^\circ C$	-	4.2		V
Continuous diode forward current	I_S	$V_{GS}=0V$	$T_J=25^\circ C$	-	-	100	A
Peak reverse recovery current	I_{RM}	$V_{DS}=800V, I_{SD}=60A, -di/dt=1500A/us$	$T_J=175^\circ C$	-	14	-	A
Reverse recovery time	t_{rr}		$T_J=175^\circ C$	-	26	-	ns
Recovery charge	Q_{rr}		$T_J=175^\circ C$	-	270	-	nC

Typical Characteristics

Fig.1 Typical Forward Output Characteristics at $T_J=25^\circ\text{C}$

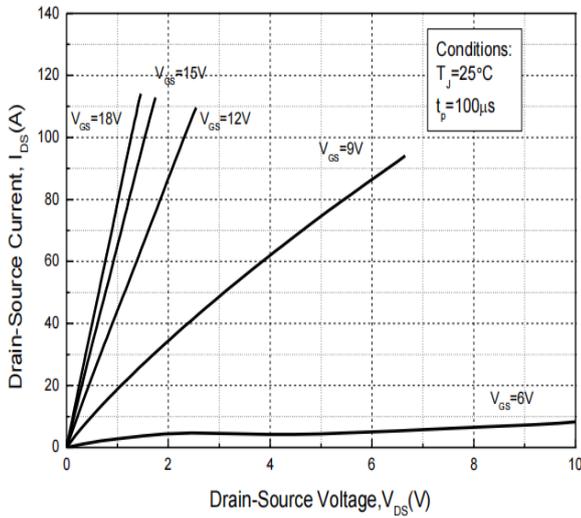


Fig.2 Typical Forward Output Characteristics at $T_J=175^\circ\text{C}$

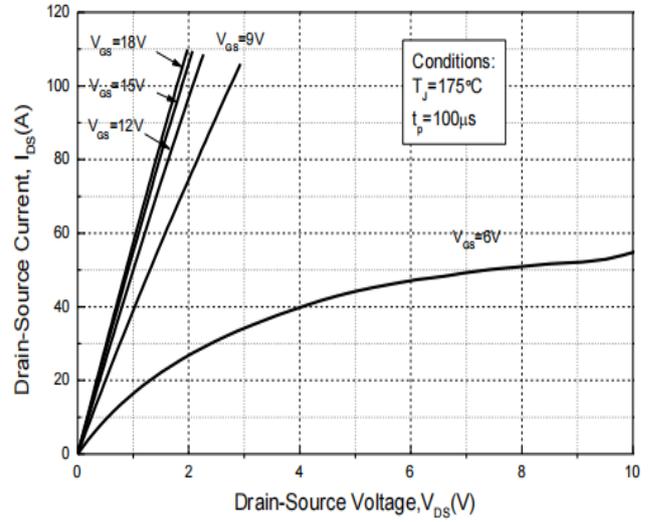


Fig.3 On-Resistance For Various Gate Voltage

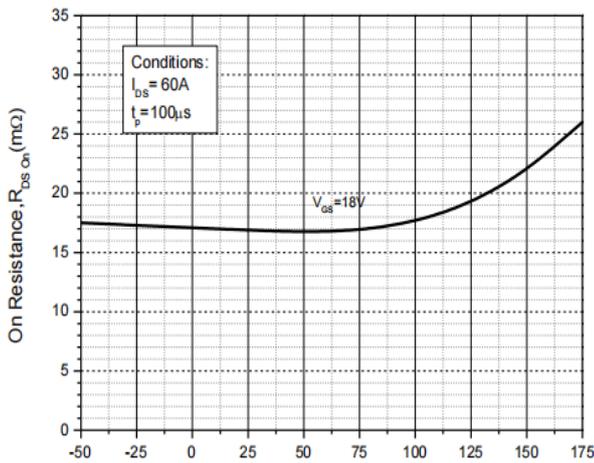


Fig.4 Threshold Voltage vs. Temperature

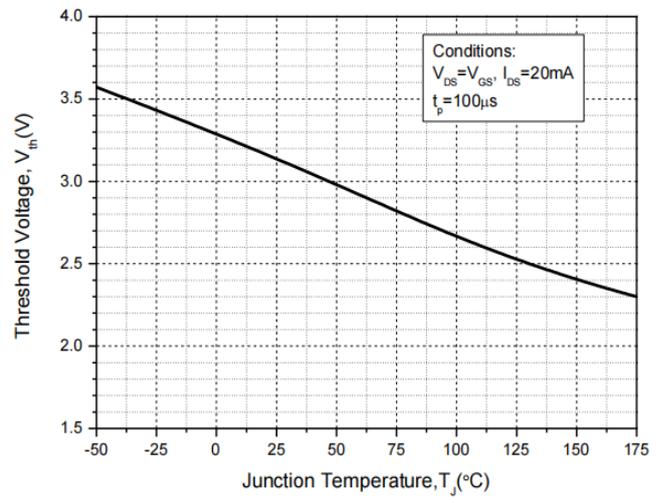


Fig.5 Body Diode Characteristics at $T_J=25^\circ\text{C}$

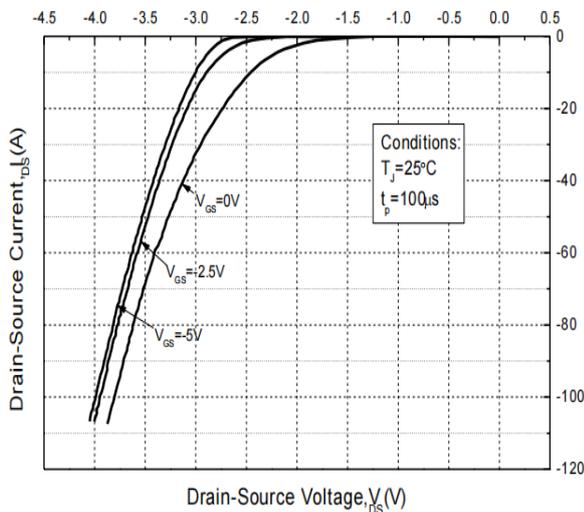


Fig.6 Body Diode Characteristics at $T_J=175^\circ\text{C}$

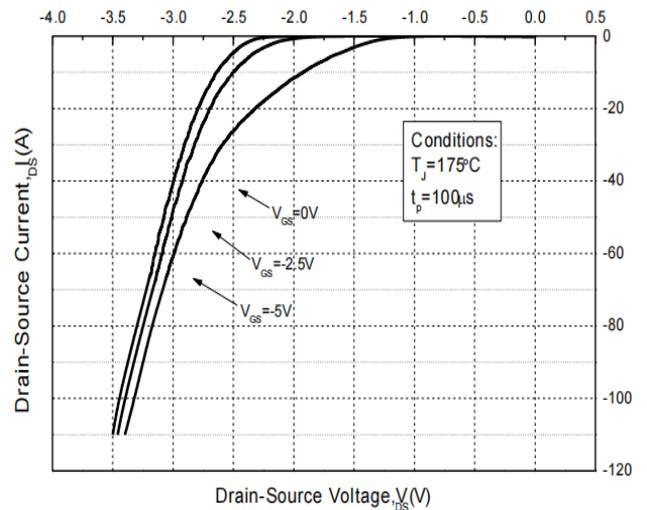


Fig.7 Capacitance vs. Drain-Source Voltage (0 - 1000V)

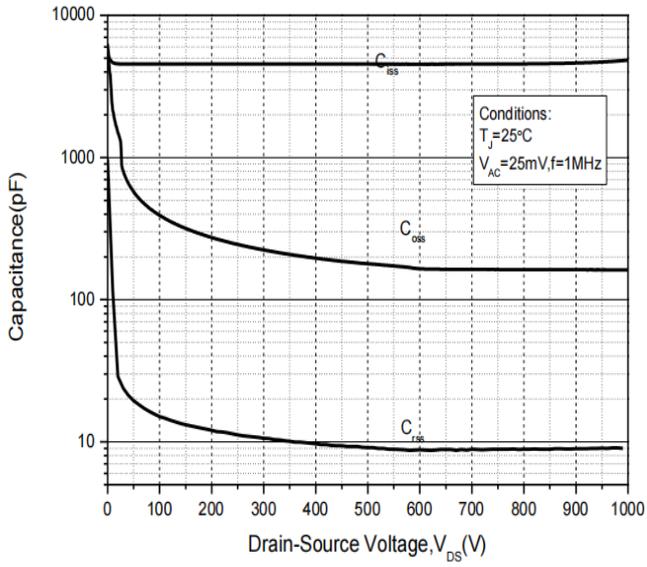
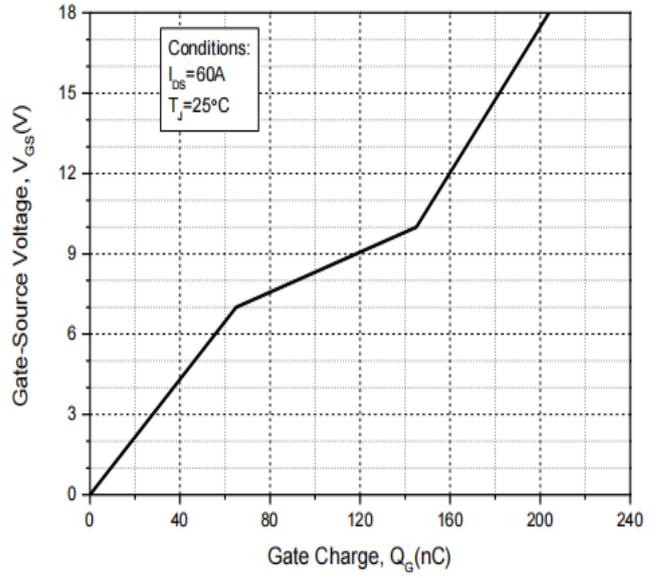
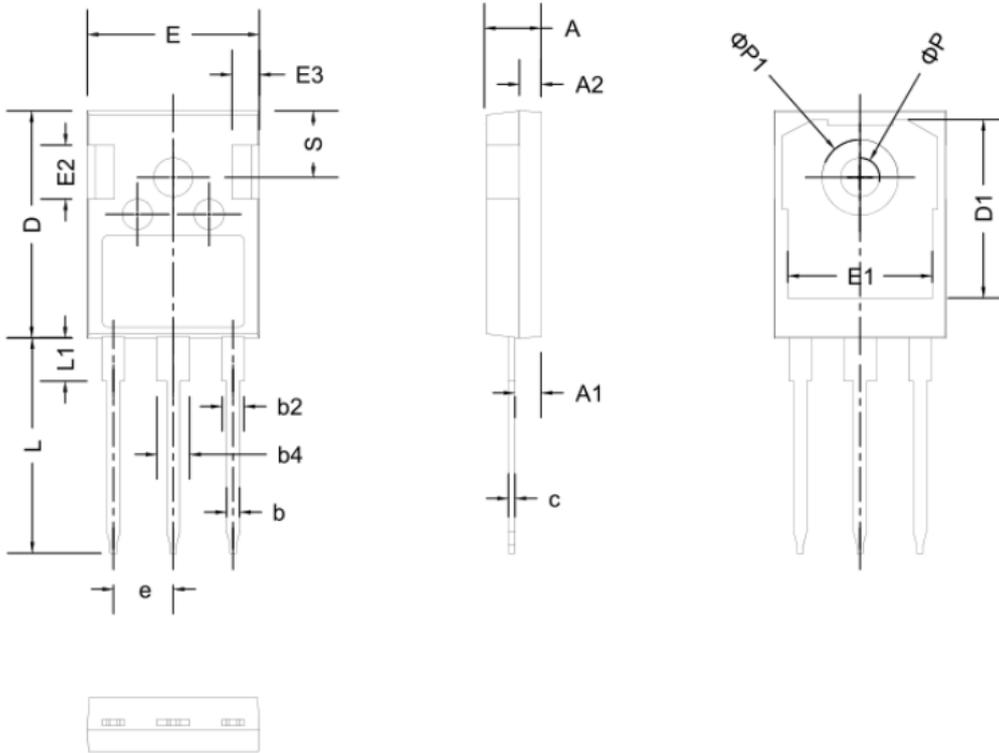


Fig.8 Gate Charge Characteristics



Package Dimensions



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.80	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44 BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ϕP	3.40	3.60	3.80
$\phi P1$	-	-	7.30
S	6.16 BSC		

Ordering Information

Part	Package	Marking	Packing method
WSCM018R120T2C	TO-247-4L	18R120T2C	Tube

Contact Information

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