

Silicon Carbide Power MOSFET N-Channel Enhancement Mode

Features

- ★ High Blocking Voltage with Low On-Resistance
- ★ High speed switching with low capacitances
- ★ Easy to Parallel and Simple to Drive
- ★ Resistant to Latch-Up
- ★ Halogen Free, RoHS Compliant

Product Summary

V_{DS}	$R_{DS(on)}$	$I_D @ 25^\circ$
1200V	13m Ω	167A

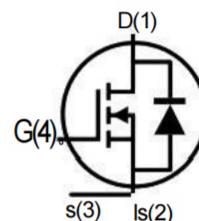
Applications

- ★ Solar Inverters
- ★ Switch Mode Power Supplies
- ★ High voltage DC/DC converters
- ★ EV Motor drive

TO-247-4L



1234



Maximum Ratings ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Value	Unit
Drain-Source Voltage	V_{DS}	$V_{GS}=0V, I_D=100\mu A$	1200	V
Gate-Source Voltage	V_{GS}	Absolute maximum values	10/+22	V
Gate-Source Voltage	V_{GSop}	Recommended operational values	-5/+18	V
Continuous Drain Current	I_D	$V_{GS}=18V, T=25^\circ\text{C}$	167	A
		$V_{GS}=18V, T=100^\circ\text{C}$	118	
Pulsed Drain Current	I_{Dp}	Pulse width, limited by T_{ma}	TBD	A
Power Dissipation	P_D	$T=25^\circ\text{C}, T=175^\circ\text{C}$	555	W
Operating Junction Temperature	$T_{vj.op}$		-55~175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}		55~175	$^\circ\text{C}$

Electrical Characteristics (Tc=25°C unless otherwise noted)

Parameter	Symbo	Condition		Value			Unit
				Min	Typ.	Max	
Drain-Source Breakdown Voltage	VB(pss)	VGs=0V, Io=100 μ A		1200			V
Gate Threshold Voltage	VGsth)	Vos=V _{6g} o=20mA	T=25°C		2.9		V
			T=175°C		2.1		
Zero Gate Voltage Drain Current	Ioss	Vos=1200V, Vss=0V			1	100	μ A
Gate-Source Leakage Current	IGss	VGs=18V, Vos=0V			1	100	nA
Drain-Source On-State Resistance	R _{oson})	VGs=18V, Io=75A	Tw=25°C		13		mQ
			T=175°C		20		
Transconductance	Bs	Vos=20V, Ios=75A	Ty=25°C		TBD		S
			Tv=175°C		TBD		
Input Capacitance	Ciss	VGs=0V Vos=1200 V f=100KHz VAc=25m V			3815		pF
Output Capacitance	Cos				239		
Reverse Transfer Capacitance	Cs				29		
Coss Stored Energy	Eoss				TBD		μ
Turn-On Switching Energy	EoN	Vos=800V, Vgs=-5/18V o=75A, Rg(ext)=2.5Q, L=250 μ H	Ty=25°C		TBD		μ
			T=175°C		TBD		
Turn Off Switching Energy	Eor		T=25°C		TBD		
			T=175°C		TBD		
Turn-On DelayTime	td(onl)	Vos=800V, Vgs=-5/18V Io=75A, RG(ext)=2.5Q, T=25°C, L=250 μ H Timing relative to Vos			TBD		ns
Rise Time	t				TBD		
Turnn-Off Delay Time	tdloff)				TBD		
Fall Time	t				TBD		
Internal Gate Resistance	RGint)	f=1MHz, VAc=25mV			TBD		Q
Gate to Source Charge	Q	Vos=800V, Vgs=-5/18V o=75A			46		nC
Gate to Drain Charge	Qg				100		
TotalGate Charge	Qg				216		

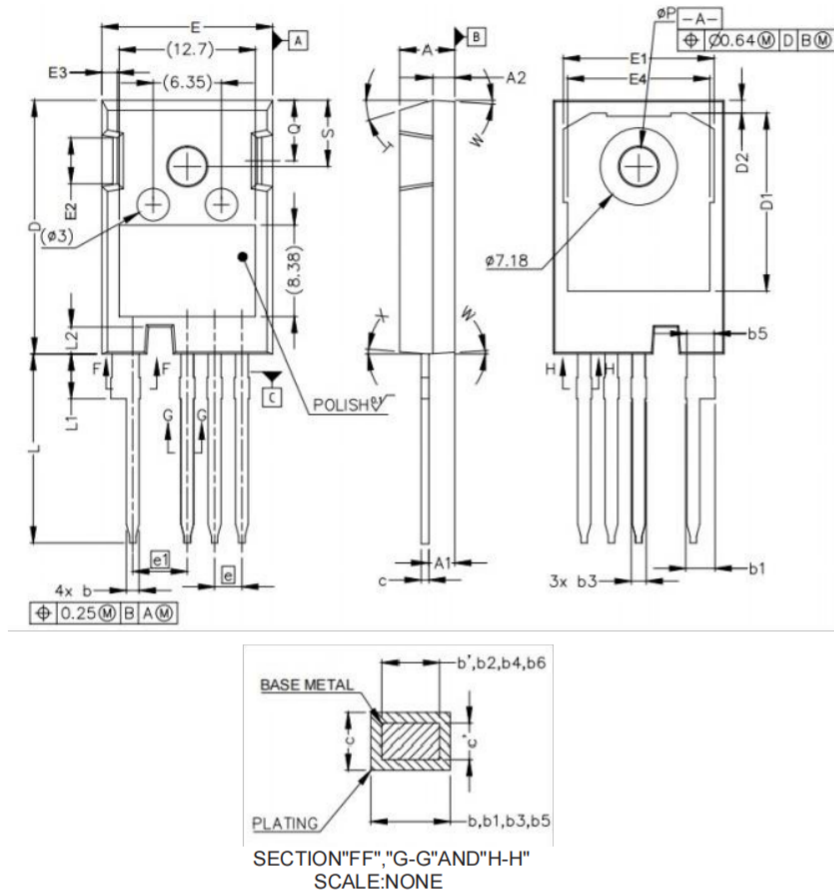
Body Diode Characteristics (Ty=25°C unless otherwise noted)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ.	Max	
Diode Forward Voltage	V _{so}	V _{cs} =-5V, I _{so} =37.5A		4.7		V
				4.1		
Continuous Diode Forward Current	I _s	V _{Gs} =-5V, T _c =25°C			TBD	A
Diode Pulse Current	st _{puse})	V _{Gs} =-5V, Pulse width t, limited by T _{jmax}			TBD	A
Reverse Recovery Time	t	V _{Gs} =-5V I _{so} =37.5A R _{Gf} =2.50 T=175°C V _R =800V		TBD		ns
Reverse Recovery Charge	Q			TBD		nC
Peak Reverse Recovery Current	m			TBD		A

Thermal Characteristics

Parameter	Symbol	Condition	Value			Unit
			Min	Typ.	Max	
Thermal Resistance: Junction to Case	R _{th} (-C			0.27	0.37	°C/W

Outline Drawing



SYMBOL	MILLIMETERS	
	MIN	MAX
A	4.83	5.21
A1	2.29	2.54
A2	1.91	2.16
b	1.07	1.28
b	1.07	1.33
b1	2.39	2.94
b2	2.39	2.84
b3	1.07	1.60
b4	1.07	1.50
b5	2.39	2.69
b6	2.39	2.64
c	0.55	0.65
c	0.55	0.68
D	23.30	23.60
D1	16.25	17.65
D2	0.95	1.25
E	15.75	16.13
E1	13.10	14.15
E2	3.68	5.10
E3	1.00	1.90
E4	12.38	13.43
e	2.54 BSC	
e1	5.08 BSC	
N	4	
L	17.31	17.82
L1	3.97	4.37
L2	2.35	2.65
oP	3.51	3.65
Q	5.49	6.00
S	6.04	6.30
	17.5 ° REF.	
W	3.5 ° REF.	
X	4 ° REF.	