



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, CA 90638

Phone: (562) 404-4474 * Fax: (562) 404-1773

ssdi@ssdi-power.com * www.ssdi-power.com

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFC15N120

Screening ^{2/}

— = Not Screened

TX = TX Level

TXV = TXV Level

S = S Level

Lead Bend Options (for TO-257 only)

— = Straight Leads

UB = Up Bend

DB = Down Bend

Package ^{3/}

J = TO-257

S.3 = SMD.3

SFC15N120

**15 AMP, 1200 VOLTS,
160 mΩ typ
SiC Power MOSFET
Enhancement Mode N-Channel**

Features:

- Fast Switching, Low Capacitance
- High Blocking Voltage, Low $R_{DS(ON)}$
- Easy to Parallel, Simple to Drive
- Resistant to Latch-Up
- Hermetically Sealed Power Packaging
- TX, TXV, S-Level Screening Available

Applications:

- High Voltage DC-DC Converters
- PFC Boost Converters
- Aerospace, Hi-Rel, Military

Maximum Ratings ^{3/}

		Symbol	Value	Unit
Drain – Source Voltage		V_{DS}	1200	V
Gate – Source Voltage, Continuous		V_{GS}	+25, -10	V
Max. Continuous Drain Current @ $T_C = 25^\circ\text{C}$	TO-257 SMD.3	I_{D1}	15 12	A
Max. Continuous Drain Current @ $T_C = 100^\circ\text{C}$	TO-257 SMD.3	I_{D2}	9 7	A
Pulsed Drain Current, $t_p = 50 \mu\text{s}$	@ $T_C = 25^\circ\text{C}$	I_{D3}	45	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	TO-257 SMD.3	P_D	70 43	W
Operating & Storage Temperature		$T_{OP} \text{ \& } T_{STG}$	-55 to +150	$^\circ\text{C}$
Maximum Thermal Resistance (Junction to Case)	TO-257 SMD.3	$R_{\theta JC}$	1.8 2.9	$^\circ\text{C/W}$

NOTES: Pulsed per MIL-STD-750.

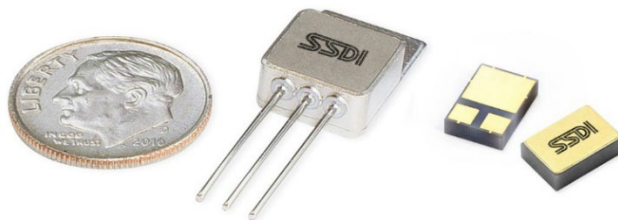
^{1/} For ordering information, price, and availability - contact factory.

^{2/} Screening based on MIL-PRF-19500. Screening flows available on request.

^{3/} Unless otherwise specified, all electrical characteristics @ 25°C .

TO-257 (J)

SMD.3 (S.3)



NOTE: All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FT0122A

DOCX



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, CA 90638

Phone: (562) 404-4474 * Fax: (562) 404-1773

ssdi@ssdi-power.com * www.ssdi-power.com

SFC15N120

Electrical Characteristics ^{3/}	Symbol	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 50\text{ }\mu\text{A}$	BV_{DSS}	1200	-	-	V
Drain to Source On State Resistance $V_{GS} = 20\text{ V}, I_D = 10\text{ A}, T_J = 25^\circ\text{C}$ $V_{GS} = 20\text{ V}, I_D = 10\text{ A}, T_J = 150^\circ\text{C}$	$R_{DS(on)}$	- -	160 320	192 380	m Ω
Gate Threshold Voltage $V_{DS} = 10\text{ V}, I_D = 0.5\text{ mA}, T_J = 25^\circ\text{C}$ $V_{DS} = 10\text{ V}, I_D = 0.5\text{ mA}, T_J = 150^\circ\text{C}$	$V_{GS(th)}$	1.80 1.30	2.00 1.45	- -	V
Gate to Source Leakage $V_{DS} = 0\text{ V}, V_{GS} = 20\text{ V}$	I_{GSS}	-	50	250	nA
Zero Gate Voltage Drain Current $V_{DS} = 1200\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^\circ\text{C}$ $V_{DS} = 1200\text{ V}, V_{GS} = 0\text{ V}, T_J = 150^\circ\text{C}$	I_{DSS}	- -	.01 .10	10 100	μA μA
Forward Transconductance $V_{DS} = 20\text{ V}, I_D = 10\text{ A}, T_J = 25^\circ\text{C}$ $V_{DS} = 20\text{ V}, I_D = 10\text{ A}, T_J = 150^\circ\text{C}$	g_{fs}	- -	4.3 4.1	- -	Mho
Total Gate Charge $V_{GS} = -5\text{ V to } 20\text{ V}$ Gate to Source Charge $V_{DS} = 500\text{ V}$ Gate to Drain Charge $I_D = 10\text{ A}$	Q_g Q_{gs} Q_{gd}	- - -	18 3 4	28 - -	nC
Turn On Delay Time Rise Time Turn Off Delay Time Fall Time $V_{DD} = 500\text{ V}, V_{GS} = 20\text{ V}, I_D = 10\text{ A}, R_G = 0, t_P \geq 2\text{ }\mu\text{s}$	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	- - - -	- - - -	40 45 50 40	ns
Diode Forward Voltage $V_{GS} = -5\text{ V}, I_F = 5\text{ A}, T_J = 25^\circ\text{C}$ $V_{GS} = -2\text{ V}, I_F = 5\text{ A}, T_J = 150^\circ\text{C}$	V_{SD}	- -	4.3 3.5	6.5 -	V
Diode Reverse Recovery Time $I_F = 9.9\text{ A}, V_{GS} = 0\text{ V}$ Reverse Recovery Charge $di/dt = 200\text{ A}/\mu\text{sec}$	t_{RR} Q_{RR}	- -	26 38	- -	ns nC
Input Capacitance Output Capacitance $V_{GS} = 0\text{ V}, V_{DS} = 100\text{ V}, f = 1\text{ MHz}$ Reverse Transfer Capacitance	C_{iss} C_{oss} C_{rss}	- - -	550 110 5	650 160 15	pF
C_{oss} Stored Energy $V_{GS} = 0\text{ V}, V_{DS} = 500\text{ V}, f = 1\text{ MHz}$	E_{oss}	-	7	-	μJ
Internal Gate Resistance $V_{AC} = 25\text{ mV}, f = 1\text{ MHz}$	$R_{G(Int)}$	-	6.5	-	Ω

NOTE: All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FT0122A

DOCX



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, CA 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

SFC15N120

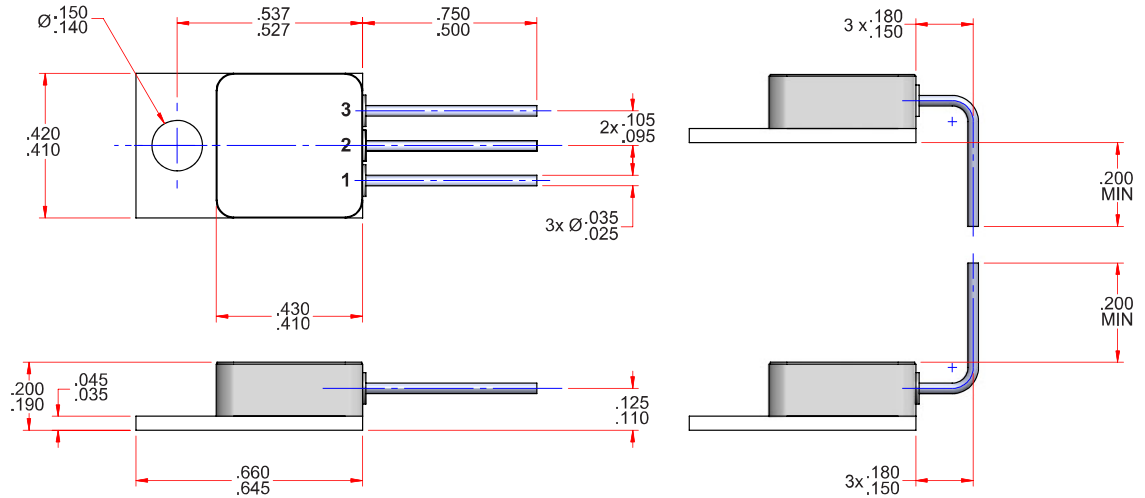
PACKAGE OUTLINE: TO-257 (J)

PINOUT:

PIN 1: DRAIN

PIN 2: SOURCE

PIN 3: GATE



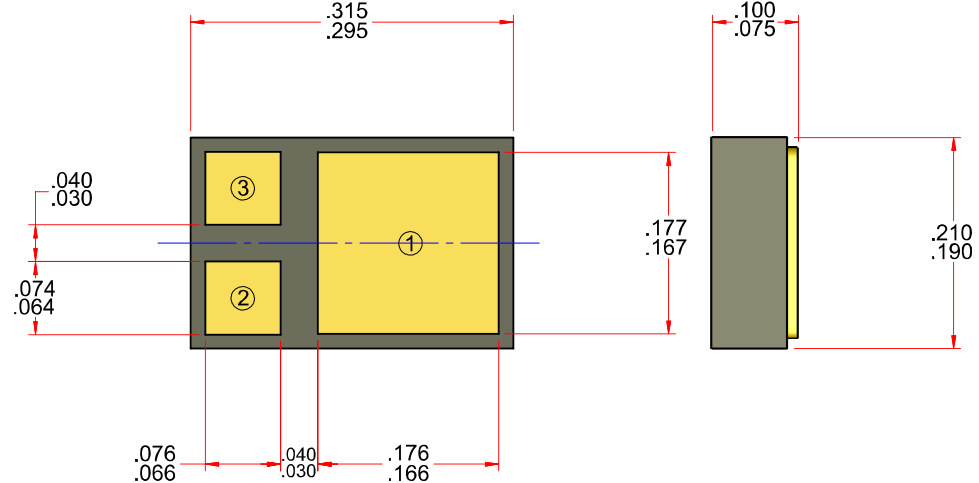
PACKAGE OUTLINE: SMD.3 (S.3)

PINOUT:

PIN 1: DRAIN

PIN 2: SOURCE

PIN 3: GATE



NOTE: All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FT0122A

DOCX