

1200 V, 1.4 V, 25 A

AFGH4L25T120RW

Description

Using the novel field stop 7th generation IGBT technology in TO247 4 lead package, this device offers the optimum performance with low on state voltage and minimal switching losses for both hard and soft switching topologies in automotive applications.

Features

Extremely Efficient Trench with Field Stop Technology

Maximum Junction Temperature $T_I = 175 \text{ C}$

Short Circuit Rated and Low Saturation Voltage

Fast Switching and Tightened Parameter Distribution

AEC Q101 Qualified, PPAP Available Upon Request

These Device is Pb Free, Halogen Free/BFR Free and is RoHS Compliant

Applications

Automotive E compressor

Automotive EV PTC Heater

OBC

MAXIMUM RATINGS (T_J = 25 C unless otherwise noted)

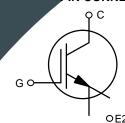
	Paramet	er		Symbol	Value	Unit
Collector-to-En	nitter Voltage			V _{CE}	1200	V
Gate-to-Emitter	Voltage	1		V_{GE}	20	
Transient Gate-	to-Emitter \	√oltage			30	
Collector Curren	t	T _C = 25 C		I _C	50	Α
		T _C = 100 C			25	
Power Dissipation	on	$T_{\rm C} = 25 {\rm C}$		P_{D}	416	W
		T _C = 100 C			208	
Pulsed Collector	Current	$T_C = 25 \text{ C},$ $tp = 10 \mu s$ (Note	1)	I _{CM}	75	Α
Short Circuit Withstand Time V _{GE} = 15 V, V _{CC} = 800 V, T _C = 150 C				T _{SC}	6	μS
Operating Junction and Storage Temperature Range			T _J , T _{stg}	-55 to +175	С	
Lead Temperatu	T_L	260				

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Repetitive rating: Pulse width limited by max. junction temperature



PIN CONNECTIONS



C E2 E1 G TO 247 4LD CASE 340CJ

MARKING DIAGRAM



AFGH25120RW = Specific Device Code &Z = Assembly Plant Code &3 = 3-Digit Date Code &K = 2-Digit Lot Traceability Code \$Y = **onsemi** Logo

ORDERING INFORMATION

Device	Package	Shipping		
AFGH4L25T120RW	TO-247-4L (Pb-Free)	30 Units / Rail		

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THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case for IGBT	$R_{\theta JC}$	0.36	C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	

ELECTRICAL CHARACTERISTICS (T_J = 25 C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Тур	Max	Unit
OFF CHARACTERISTICS			-			-
Collector-to-Emitter Breakdown Voltage	BV _{CES}	$V_{GE} = 0 \text{ V}, I_{C} = 1 \text{ mA}$	1200	-	_	V
Zero Gate Voltage Collector Current	I _{CES}	$V_{GE} = 0 V$, $V_{CE} = V_{CES}$	-	-	40	μΑ
Gate-to-Emitter Leakage Current	I _{GES}	$V_{GE} = 20 \text{ V}, V_{CE} = 0 \text{ V}$	-	-	400	nA
ON CHARACTERISTICS						
Gate-to-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 25 \text{ mA}$	5.1	6.0	6.9	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	V_{GE} = 15 V, I_{C}			•	

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ELECTRICAL CHARACTERISTICS ($T_J = 25$ C unless otherwise specified) (continued)

Parameter	Symbol	Test Conditions	Min	Тур	Max	Unit
SWITCHING CHARACTERISTICS (No	te: Si Diode Applied)				
Turn-On Delay Time	t _{d(on)}	$V_{CE} = 600 \text{ V}, V_{GE} = 0/15 \text{ V}, \\ I_{C} = 25 \text{ A}, R_{G} = 8 \Omega,$	_	47.3	_	ns
Turn-Off Delay Time	t _{d(off)}	$I_C = 25 \text{ A}, R_G = 8 \Omega,$ $T_J = 175 \text{ C}$	_	265	_	
Rise Time	t _r		_	45	_	
Fall Time	t _f		_	241	_	
Turn-On Switching Loss	E _{on}		_	2.15	_	mJ
Turn-Off Switching Loss	E _{off}		_	1.92	_	
Total Switching Loss	E _{ts}		_	4.07	_	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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TO-247-4LD CASE 340CJ ISSUE A

DATE 16 SEP 2019

Α В Øp1 D2 Α E E1 **A2** Q E/2 D1 D Ø L1 b2 **A1** b1 (3X) Ĺ 1 4 С b(4X) e1 e 2X ⊕ 0.254 M B A M

