

# IGBT for Automotive Application

1200 V, 25 A

## AFGHL25T120RLD

### Description

This Insulated Gate Bipolar Transistor (IGBT) features a robust and cost effective Field Stop II Trench construction. Provides superior performance in demanding switching applications, offering both low on state voltage and minimal switching loss, which is AEC Q101 qualified offer the optimum performance for both hard and soft switching topology in automotive application.

### Features

- Extremely Efficient Trench with Field Stop Technology
- Maximum Junction Temperature:  $T_J = 175^{\circ}\text{C}$
- Short Circuit Withstand Time 9  $\mu\text{s}$
- 100% of the Parts Tested for  $I_{LM}$  (Note 2)
- Fast Switching
- Tighten Parameter Distribution
- AEC-Q101 Qualified and PPAP Capable
- This Device is Pb-Free, Halogen Free/BFR Free and is RoHS Compliant

### Typical Applications

- Automotive HEV-EV E-Compressor
- Automotive HEV-EV PTC Heater
- Automotive HEV-EV PTC Onboard Chargers
- Automotive HEV-EV DC-DC Converters



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$V_{CES}$	$I_C$	$V_{CE(Sat)}$
1200 V	25 A	1.73 V (Typ.)

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### MARKING DIAGRAM

AFG25T  
120RLD  
\$Y&Z&3&K

AFG25T120RLD = Specific Device Code  
\$Y = ON Semiconductor Logo  
&Z = Assembly Plant Code  
&3 = 3-Digit Data Code  
&K = 2-Digit Lot Traceability Code

### ORDERING INFORMATION

# AFGHL25T120RLD

## ABSOLUTE MAXIMUM RATINGS

Description	Symbol
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# AFGHL25T120RLD

## ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise specified) (continued)

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
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### DYNAMIC CHARACTERISTICS

Input Capacitance	$V_{CE} = 30\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	$C_{ies}$	–	6174	–	pF
Output Capacitance		$C_{oes}$	–	212	–	
Reverse Transfer Capacitance		$C_{res}$	–	114	–	

### SWITCHING CHARACTERISTICS, INDUCTIVE LOAD

Turn-on Delay Time	$T_C = 25^\circ\text{C}$ $V_{CC} = 600\text{ V}, I_C = 12.5\text{ A}$ $R_g = 5\ \Omega$ $V_{GE} = 15\text{ V}$ Inductive Load	$t_{d(on)}$	–	25.6	–	ns
Rise Time		$t_r$	–	9.6	–	
Turn-off Delay Time		$t_{d(off)}$	–	126.0	–	
Fall Time		$t_f$	–	86.0	–	

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## TYPICAL CHARACTERISTICS (continued)

Figure 7. Capacitance Characteristics

Figure 8. Gate Charge Characteristics

Figure 9. Turn-on Characteristics vs. Gate Resistance

Figure 10. Turn-off Characteristics vs. Gate Resistance

Figure 11. Turn-on Characteristics vs. Collector Current

Figure 12. Turn-off Characteristics vs. Collector Current

**AFGHL25T120RLD**

**TYPICAL CHARACTERISTICS**

AFGHL25T120RLD



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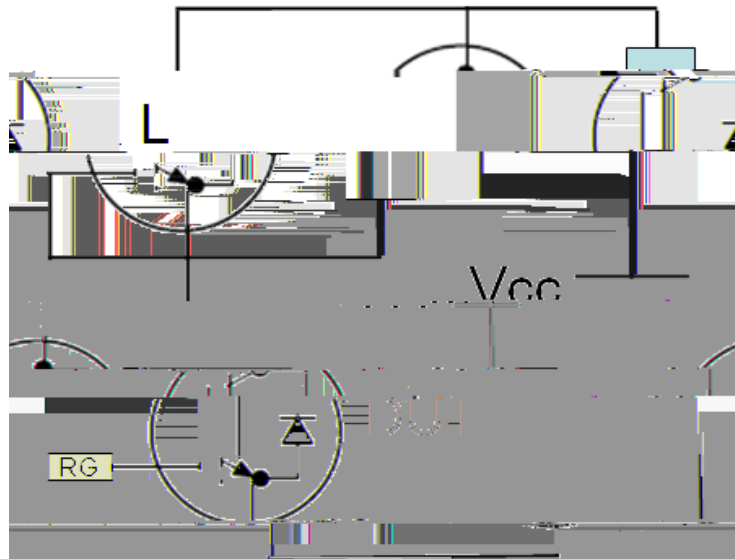


Figure 21. Test Circuit for Switching Characteristics

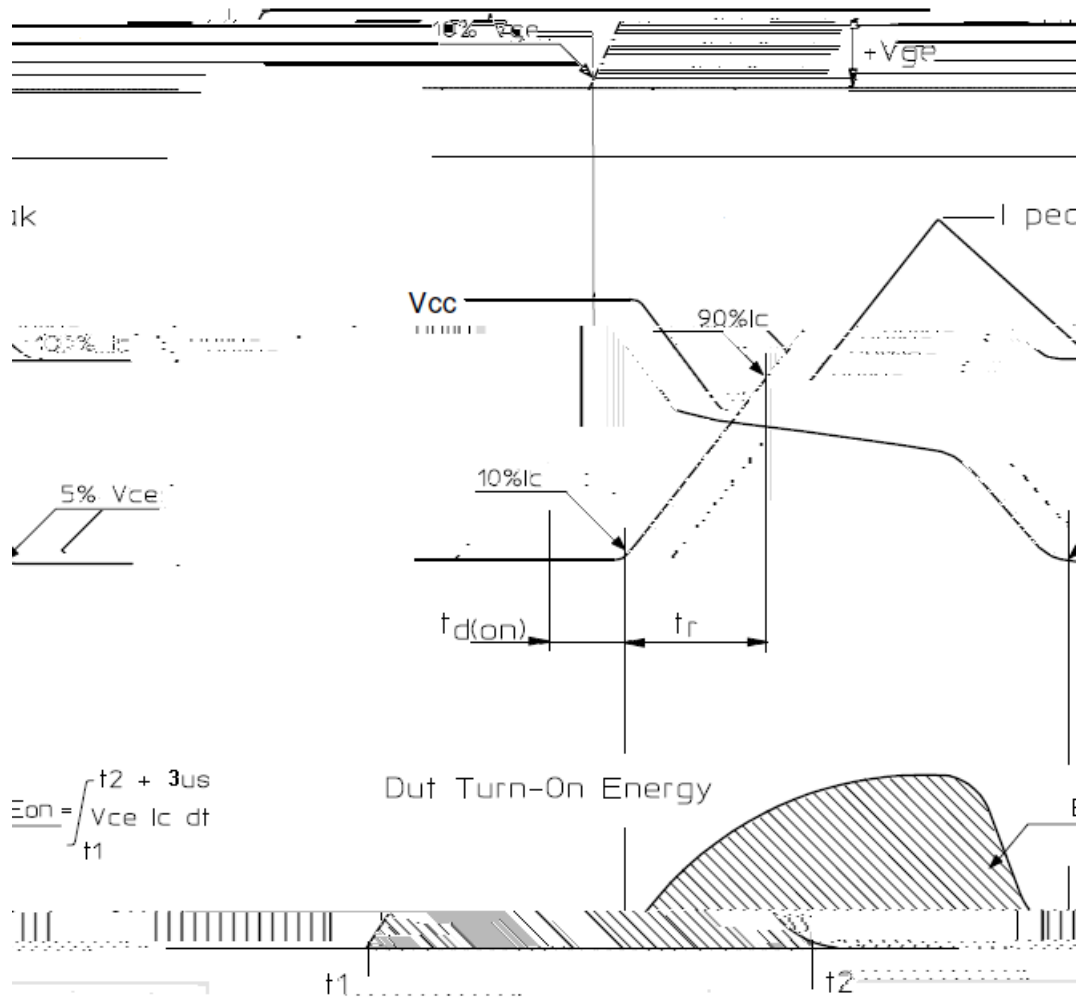
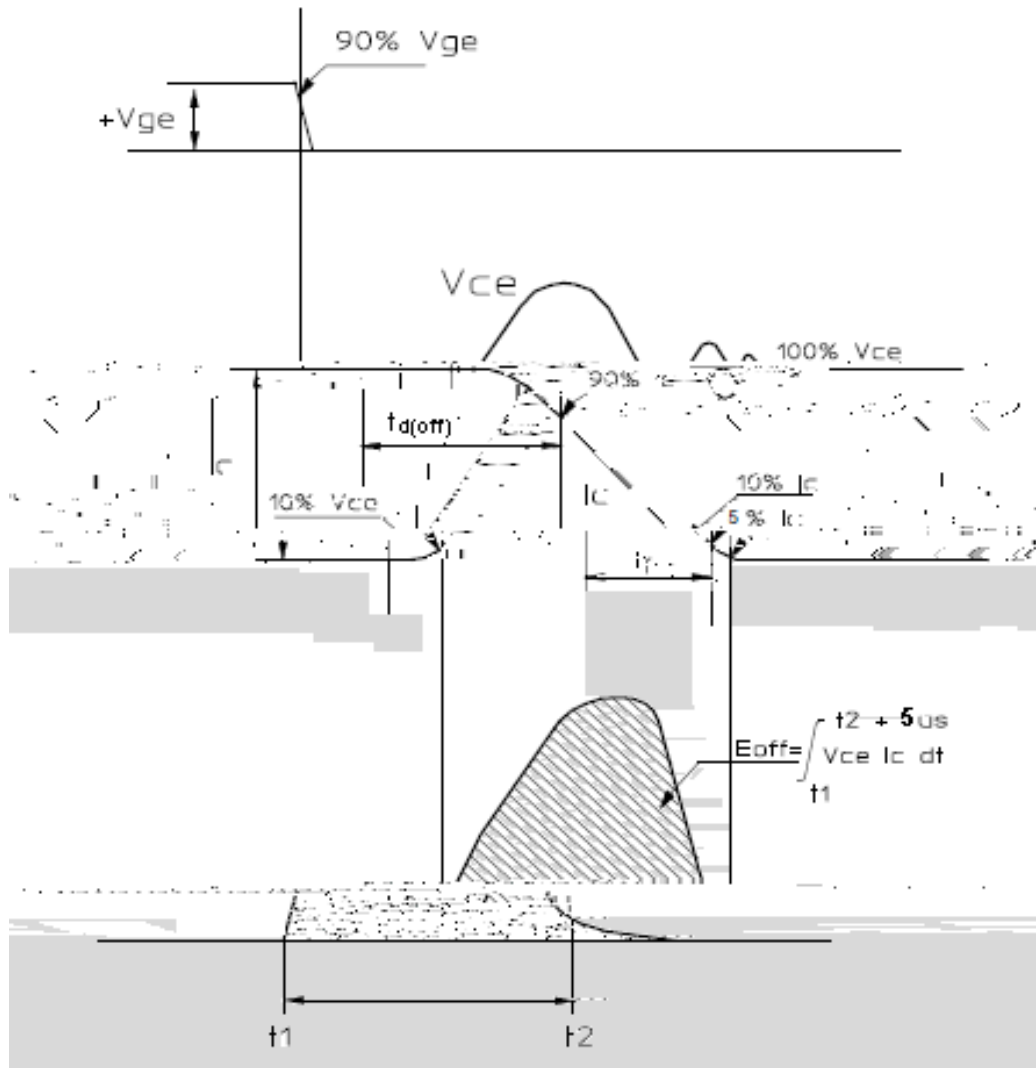


Figure 22. Definition of Turn On Waveform





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