

IGBT - Power, Co-PAK N-Channel, Field Stop IV, MQ (Medium Speed), TO247-4L 650 V, 1.45 V, 75 A

FGH4L75T65MQDC50

Using the novel field stop 4th generation IGBT technology and generation 1.5 SiC Schottky Diode technology in TO-247 4-lead package, FGH4L75T65MQDC50 offers the optimum performance with both low conduction and switching losses for high-efficiency operations in various applications, especially totem pole bridgeless PFC and Inverter.

Features

- Positive Temperature Coefficient for Easy Parallel Operation
- High Current Capability
- 100% of the Parts are Tested for I_{LM} (Note 2)

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THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance Junction-to-Case, for IGBT	$R_{\theta JC}$	0.39	°C/W
Thermal Resistance Junction-to-Case, for Diode	$R_{\theta JCD}$	0.74	
Thermal Resistance Junction-to-Ambient4 ref5 ref522.312 1on			

FGH4L75T65MQDC50

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
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SWITCHING CHARACTERISTICS, INDUCTIVE LOAD

Turn-on Delay Time	$T_J = 175^\circ\text{C}, V_{CC} = 400\text{ V},$ $I_C = 37.5\text{ A}, R_G = 15\ \Omega,$ $V_{GE} = 10\text{ V},$ Inductive Load	$t_{d(on)}$	-	24	-	ns
Rise Time		t_r	-	20	-	
Turn-off Delay Time		$t_{d(off)}$	-	220	-	
Fall Time		t_f	-	72	-	
Turn-on Switching Loss		E_{on}	-	0.41	-	mJ
Turn-off Switching Loss		E_{off}	-	0.82	-	
Total Switching Loss		E_{ts}	-	1.23	-	
Turn-on Delay Time	$T_J = 175^\circ\text{C}, V_{CC} = 400\text{ V},$ $I_C = 75\text{ A}, R_G = 15\ \Omega,$ $V_{GE} = 10\text{ V},$ Inductive Load	$t_{d(on)}$	-	27	-	ns
Rise Time		t_r	-	34	-	
Turn-off Delay Time		$t_{d(off)}$	-	202	-	
Fall Time		t_f	-	54	-	
Turn-on Switching Loss		E_{on}	-	0.91	-	mJ
Turn-off Switching Loss		E_{off}	-	1.30	-	
Total Switching Loss		E_{ts}	-	2.20	-	

DIODE CHARACTERISTICS

Diode Forward Voltage	$I_F = 50\text{ A}, T_J = 25^\circ\text{C}$	V_F	-	1.46	1.7	V
	$I_F = 50\text{ A}, T_J = 175^\circ\text{C}$		-	1.83	-	
Total Capacitance	$V_R = 400\text{ V}, f = 1\text{ MHz}, T_J = 25^\circ\text{C}$	C	-	210	-	pF
	$V_R = 600\text{ V}, f = 1\text{ MHz}, T_J = 25^\circ\text{C}$		-	202	-	

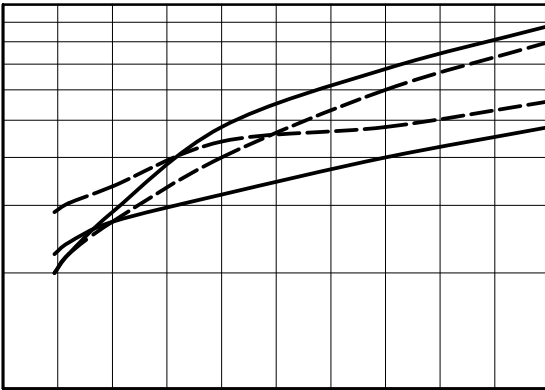
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

FGH4L75T65MQDC50

TYPICAL CHARACTERISTICS

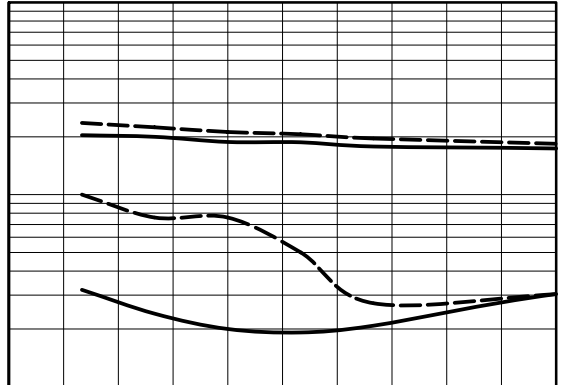
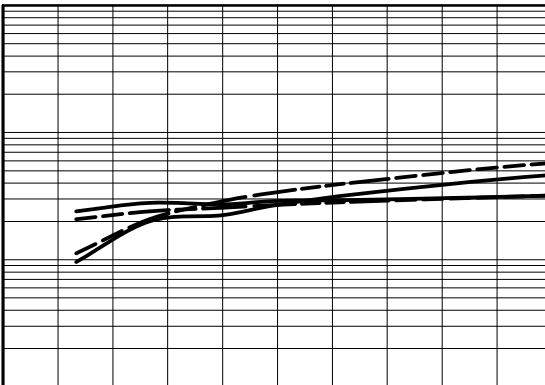
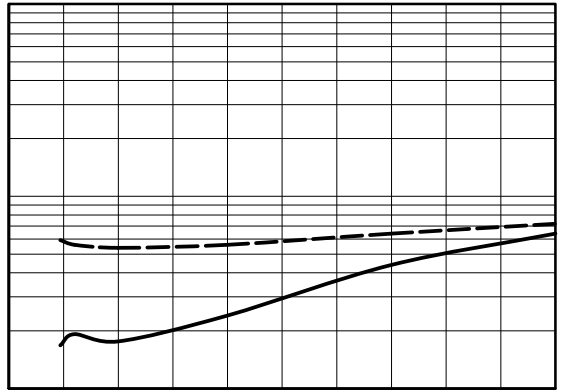
Q_G , GATE CHARGE (nC)

Figure 7. Gate Charge Characteristics



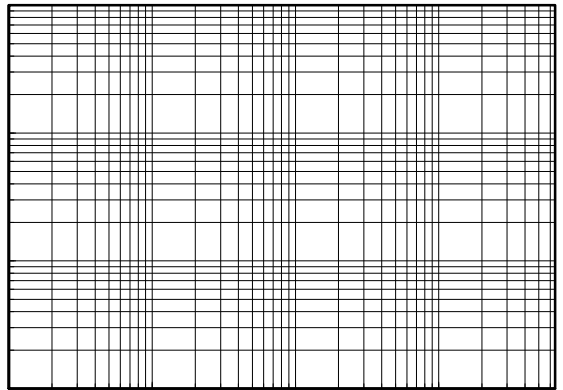
V_{CE} , COLLECTOR

Figure 8. SOA Characteristics



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TYPICAL CHARACTERISTICS



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TYPICAL CHARACTERISTICS

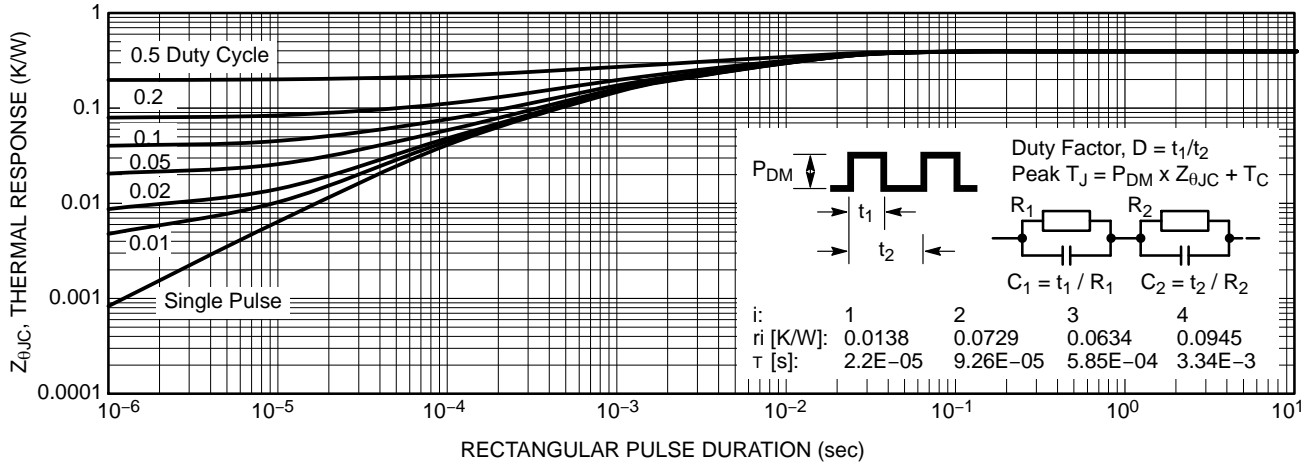


Figure 18. Transient Thermal Impedance of IGBT

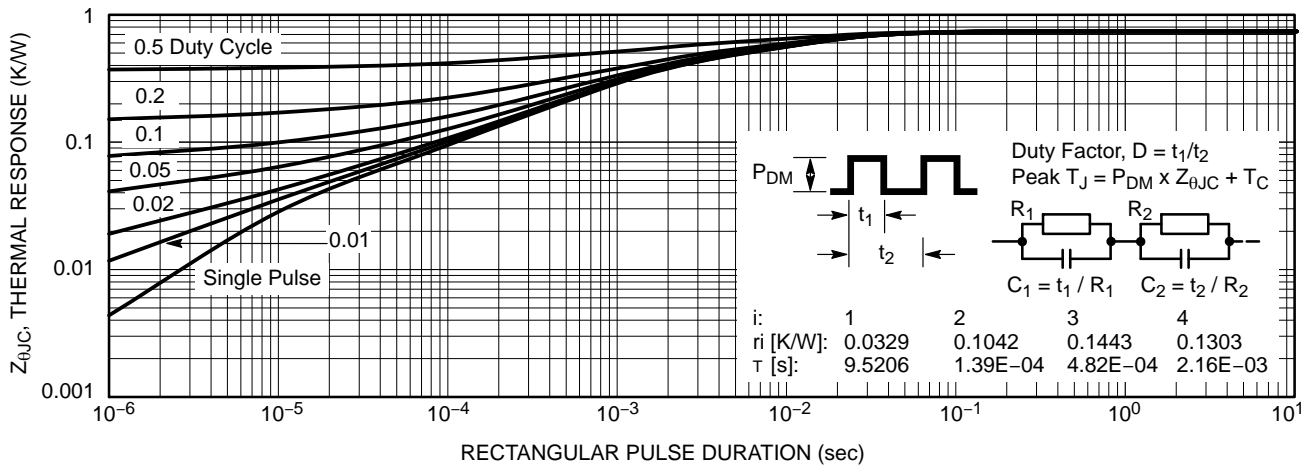


Figure 19. Transient Thermal Impedance of Diode

TO-247-4LD
CASE 340CJ
ISSUE A

DATE 16 SEP 2019

A

E

A

B

E1

Øp1
D2

A2

Q

E/2

D

D1

Ø

L1

b2

A1

b1 (3X)

L

1

4

c

e1

b(4X)

e 2X

⊕ 0.254 (M) B A (M)

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