



JMH65R190PCFD

Features

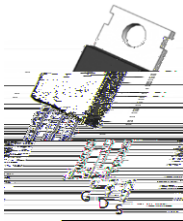
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS Tested
- 100% $\bar{u}V_{ds}$ Tested
- Halogen-free; RoHS-compliant

Applications

- SMPS with PFC
- Flyback
- Silver ATX, adapter, TV, lighting, Telecom

Product Summary

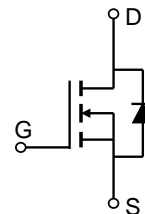
Parameters	Value	Unit
V_{DSS}	650	V
$V_{GS(th_Typ)}$	3.4	V
$I_D(@V_{GS}=10V)$	15	A
$R_{DS(ON)_Typ}(@V_{GS}=10V)$	156	m Ω



TO-220-3L Top View



Pin Assignment



Schematic Diagram

Ordering Information

Device	Marking	MSL	Form	Package	Tube(pcs)	Per Carton (pcs)
JMH65R190PCFD-U	H65R190PF	N/A	Tube	TO-220-3L	50	5000

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-to-Source Voltage	650	V
V_{GS}	Gate-to-Source Voltage	± 30	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	15
		$T_C = 100^\circ\text{C}$	10
I_{DM}	Pulsed Drain Current ⁽¹⁾	Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	65	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	114
		$T_C = 100^\circ\text{C}$	45
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta J-A}$	Thermal Resistance, Junction to Ambient ⁽³⁾	68	$^\circ\text{C}/\text{W}$
$R_{\theta J-C}$	Thermal Resistance, Junction to Case	1.1	

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics					
V _{(BR)DSS}		650	-	-	V
I _{DSS}		-	-	10.0	μA
I _{GSS}		-	-	±100	nA
V _{GS(th)}		2.4	3.4	4.5	V
R _{DS(ON)}		-	156	190	mΩ
R _g		-	4.9	-	Ω
C _{iss}		1084	1517	2049	pF
C _{oss}		28	39	52	pF
C _{rss}		-	5.9	-	pF
Q _g		23	32	43	nC
Q _{gs}		-	10	-	nC
Q _{gd}		-	11	-	nC
t _{d(on)}		-	36	-	ns
t _r	V _{GS} = 10V, V _{DD} = 310V	-	38	-	ns
t _{d(off)}	I _D = 10A, R _{GEN} = 24Ω	-	100	-	ns
t _f	Turn-Off Fall Time	-	30	-	ns
Body Diode Characteristics					
I _S		-	-	15	A
I _{SM}		-	-	61	A
V _{SD}	Body Diode Forward Voltage	V _{GS} = 0V, I _S = 10A		1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F = 10A, di/dt = 100A/us		177	ns
Q _{rr}	Body Diode Reverse Recovery Charge	-	851	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25°C, V_{DD}=50V, V_{GS}=10V, R_G=25ohm, L=10mH, I_{AS}=3.6A, V_{DD}=0V during time in avalanche.
 3. R_{θJC} is measured with the device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 4. Pulse Test: Pulse Width < 100ns, V_{GS} = 10V, V_{DD} = 310V, I_D = 10A, R_{GEN} = 24Ω.



Typical Performance Characteristics

Figure 1: Power De-rating

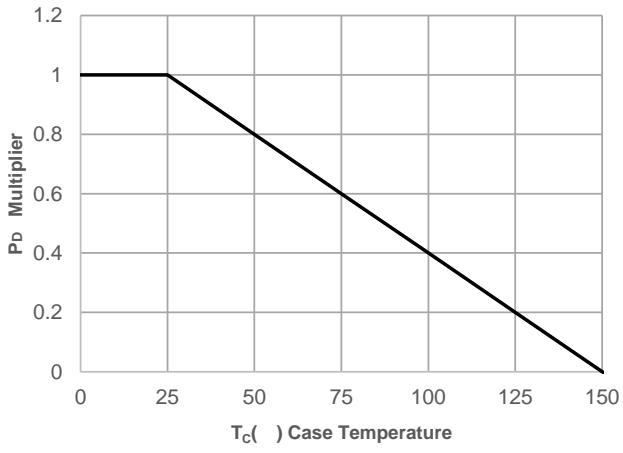
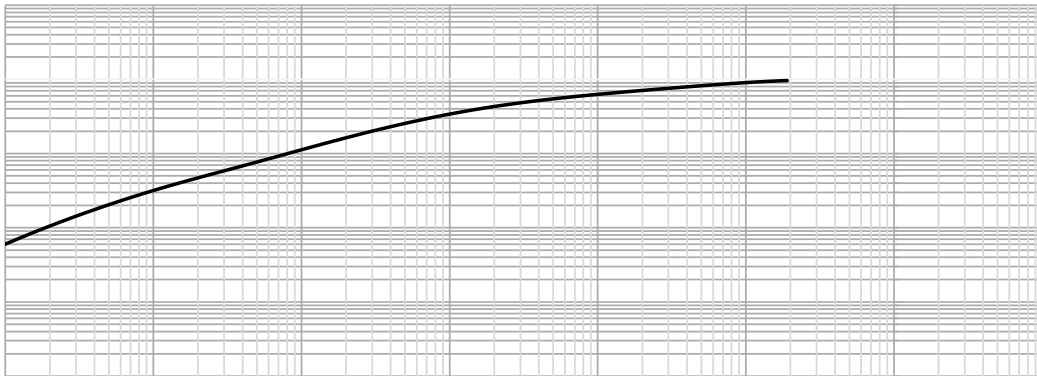
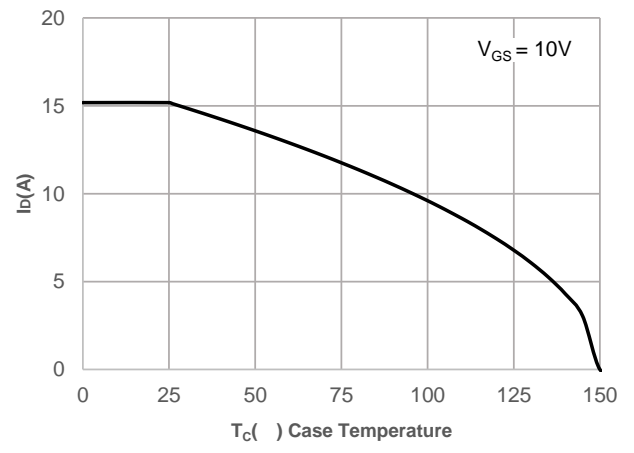
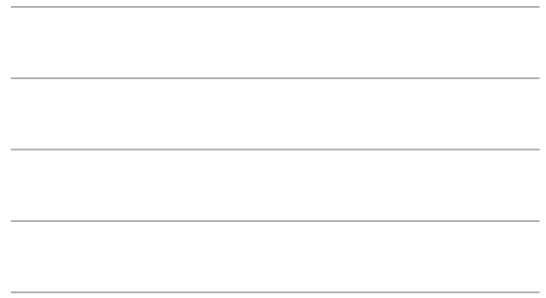
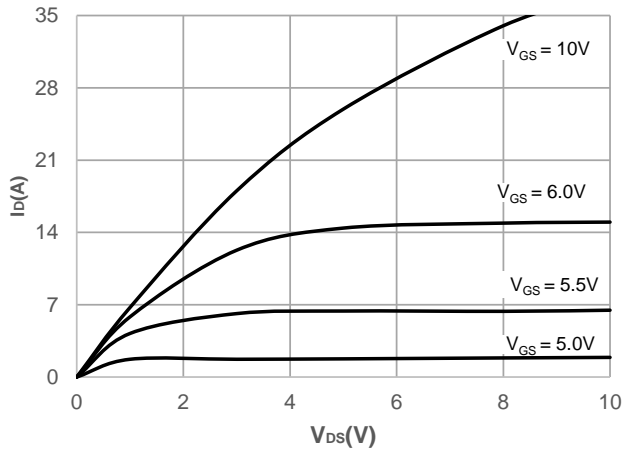


Figure 2: Current De-rating



Typical Performance Characteristics

Figure 5: Output Characteristics



Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform

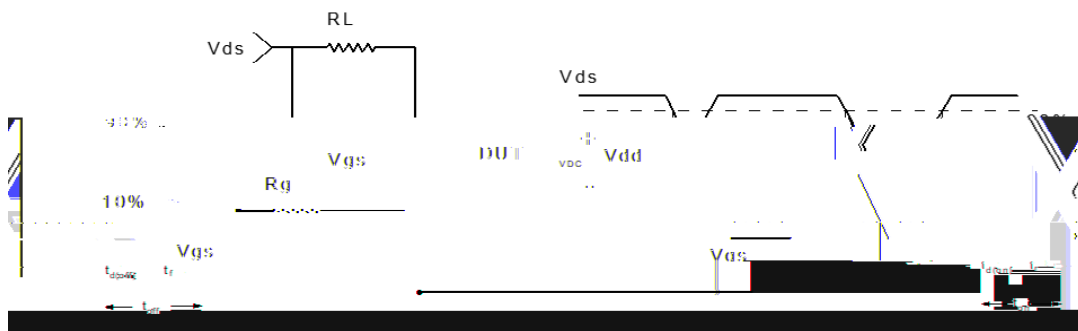


Figure 2: Resistive Switching Test Circuit & Waveform

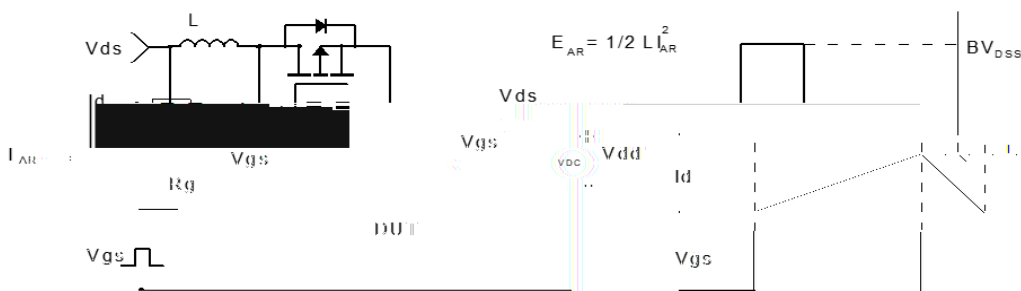


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

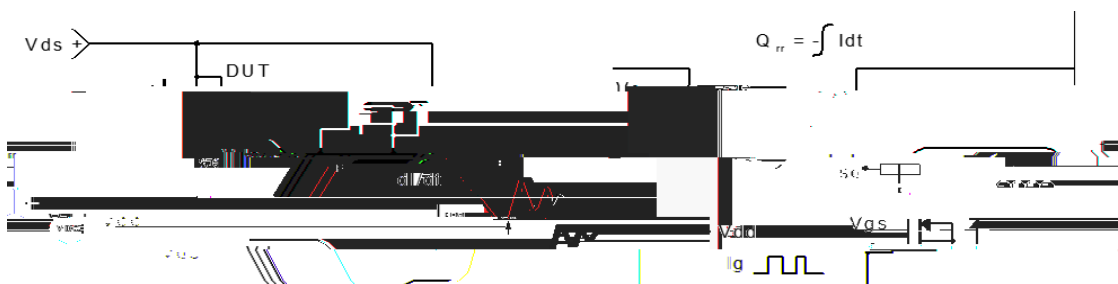


Figure 4: Diode Recovery Test Circuit & Waveform



Package Mechanical Data(TO-220-3L)

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