650V SuperJunction Power MOSFET

Features

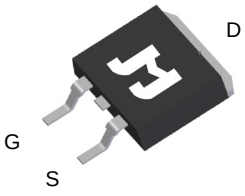
- Extremely Low Gate Charge
- Excellent Output Capacitance (C_{oss}) Profile
- Fast Switching Capability
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free

- Switching Applications

Product Summary

Parameter	Value	Unit
V_{DS}	650	V
$V_{GS(th)\_Typ}$	3.5	V
I_D (@ V_{GS} = 10V) (1)	35.0	A
$R_{DS(ON)\_Typ}$ (@ V_{GS} = 10V)	98	mΩ
E_{oss}@400V		

TO-220-3L Top View



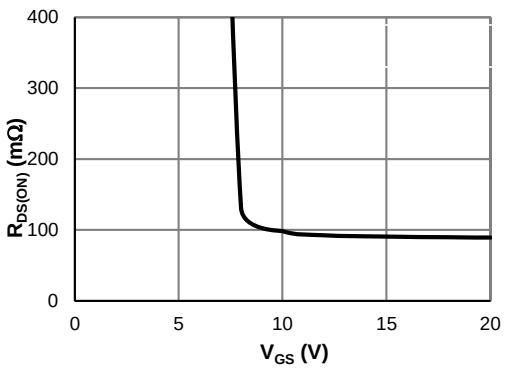
Ordering Information

Device							
JMH65R110ACFD-U							
JMH65R110AEFD-13							

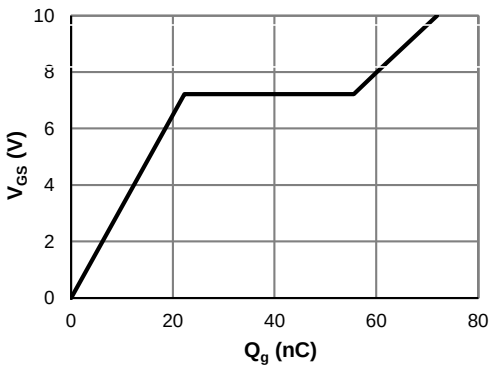
Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter			Value	
Drain-to-Source Voltage			650	
Gate-to-Source Voltage		V_{GS}	±30	V
Continuous Drain Current (1)	T_C = 25°C	I_D	35	A
	T_C = 100°C		21	
Pulsed Drain Current (2)		I_{DM}	137	A
Avalanche Current (3)		I_{AS}	10.0	A
Avalanche Energy (3)		E_{AS}	500	mJ
Power Dissipation (4)	T_C = 25°C	P_D	313	W
	T_C = 100°C		125	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

$R_{DS(ON)}$ vs. V_{GS}



Gate Charge



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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
STATIC PARAMETERS							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V		650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, V_{GS} = 0V				10.0	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA		2.5	3.5	4.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 10A	TO-263-3L		98	110	mΩ
			TO-220-3L		99	110	mΩ
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V			0.75		V
Diode Continuous Current	I_S	T_C = 25°C			= 10V)V	10	A
DYNAMIC PARAMETERS [5]							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 100V, f = 1MHz			2869		pF
Output Capacitance	C_{oss}				93		pF
Effective output capacitance, energy related	$C_{o(er)}$				97		pF
Effective output capacitance, time related	$C_{o(tr)}$				410		pF
Reverse Transfer Capacitance	C_{rss}	V_{GS} = 0V, V_{DS} = 100V, f = 1MHz			5.4		pF
Gate Resistance	R_g				2.2		Ω
SWITCHING PARAMETERS [5]							
	Q_g				72		nC
	Q_{gs}				22		nC
	Q_{gd}				33		nC
	$t_{D(on)}$				29		ns
	t_r				30		ns
	$t_{D(off)}$				77		ns
	t_f				17.4		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F = 10A, dI_F/dt = 100A/μs			152		ns
Body Diode Reverse Recovery Charge	Q_{rr}				2.5		μC
	dv/dt				15.0		V/ns
	dv/dt				50		V/ns

Parameter	Symbol		Unit
	$R_{\theta JA}$	45	°C/W
	$R_{\theta JC}$		°C/W

Notes:

application board design.

Typical Electrical & Thermal Characteristics

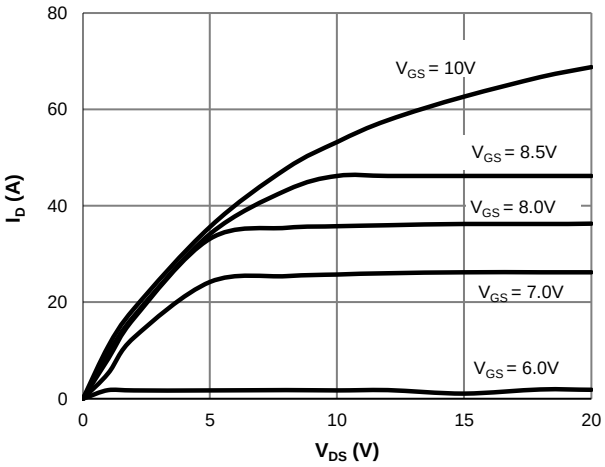


Figure 1: Saturation Characteristics

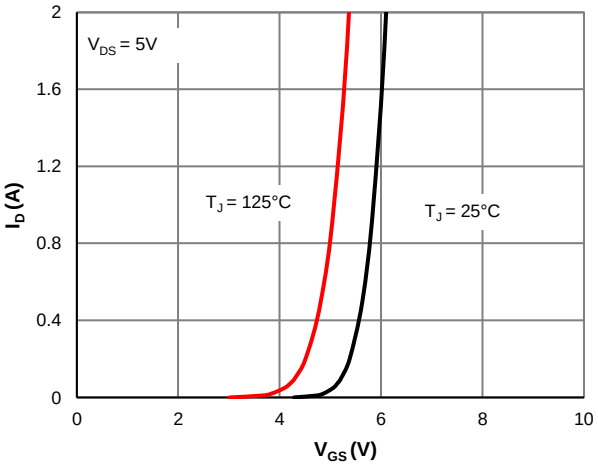


Figure 2: Transfer Characteristics

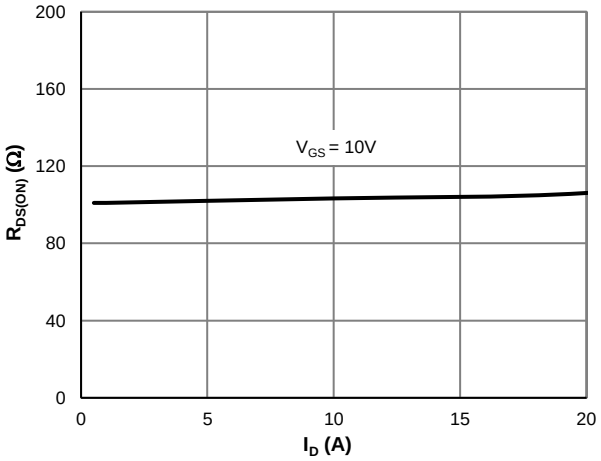


Figure 3: $R_{DS(ON)}$ vs. Drain Current

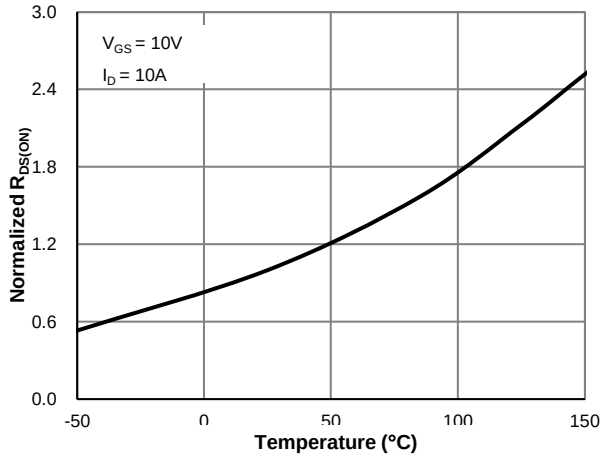


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

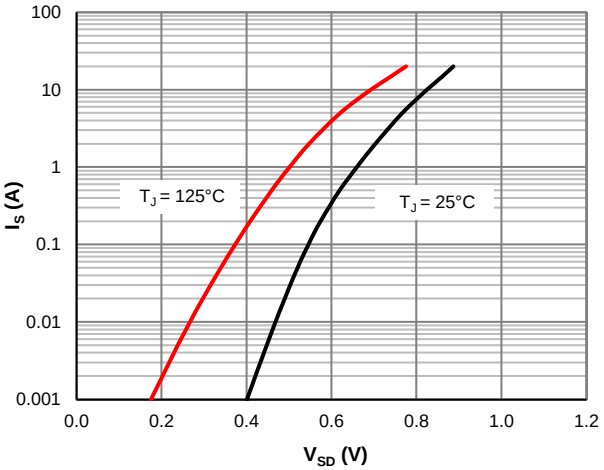


Figure 5: Body-Diode Characteristics

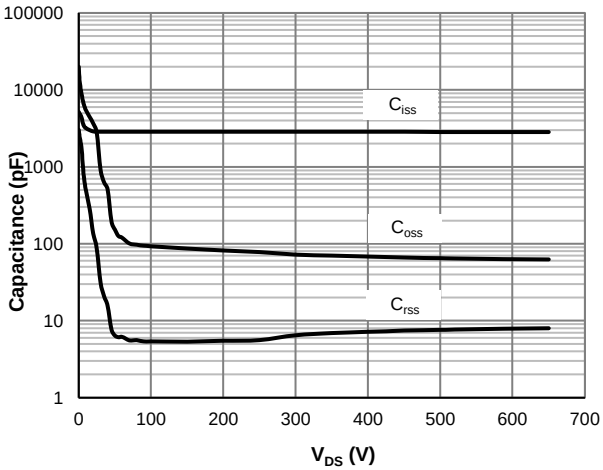


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

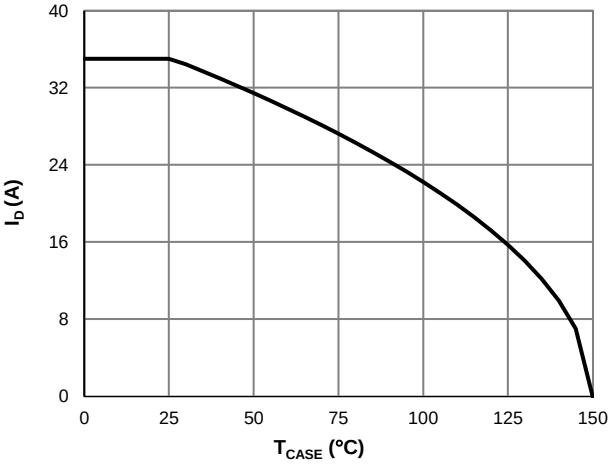


Figure 7: Current De-rating

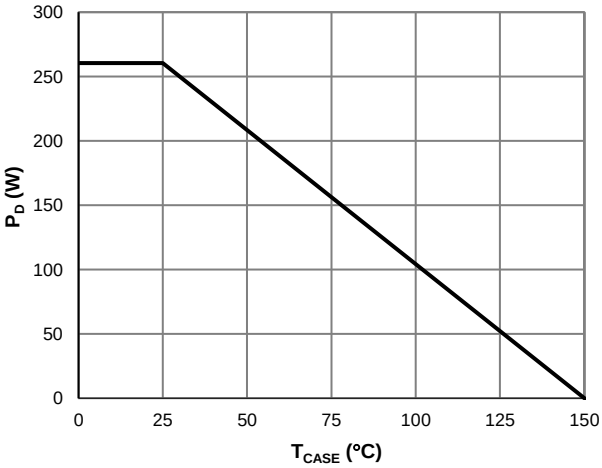
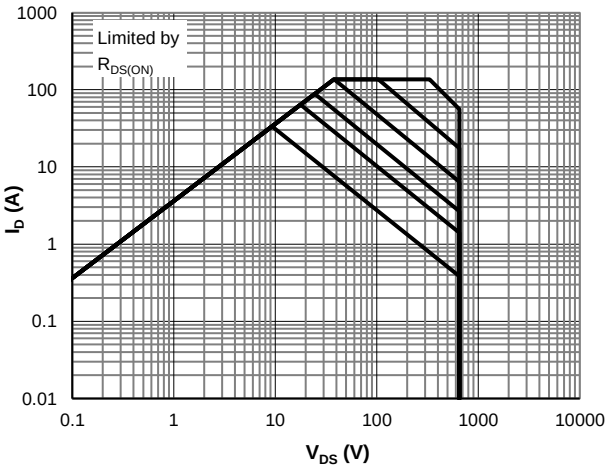


Figure 8: Power De-rating



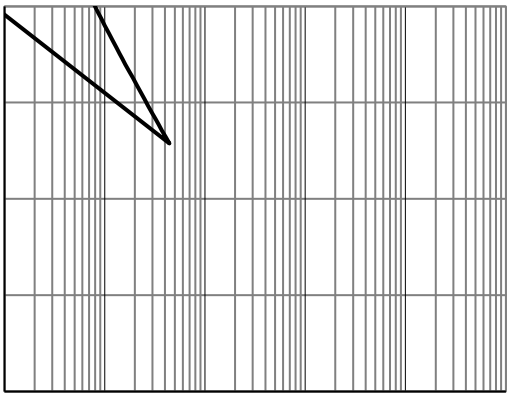
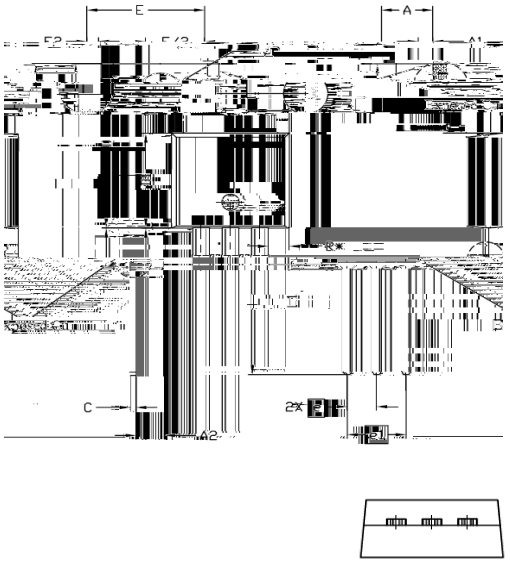
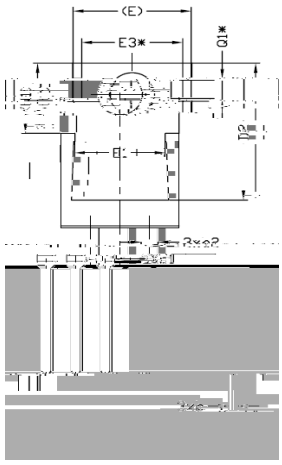


Figure 9: Maximum Safe Operating Area

TO-220-3L Package Information

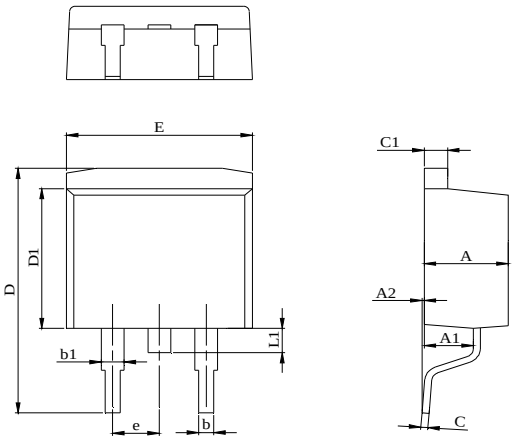




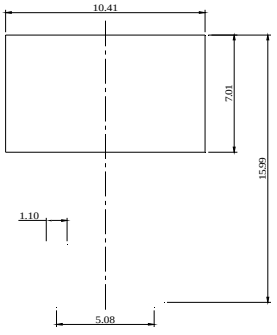
NOTES	SYMBOL	MILLIMETERS		
		MIN.	NOM.	MAX.
	A	4.24	4.44	4.64
	A1	1.15	1.27	1.40
	A2	2.30	2.48	2.70
	b	0.70	0.80	0.90
	b1	1.20	1.55	1.75
	b2	1.20	1.45	1.70
	c	0.40	0.50	0.60
4	D	14.70	15.37	16.00
	D1	8.82	8.92	9.02
5	D2	12.43	12.73	12.83
4,5	E	9.96	10.16	10.36
	E1	7.80	8.00	8.20
	E2*		8.60REF	
	e		2.54BSC	
	e1		5.08BSC	
4,5,6	H1	6.30	6.45	6.60
	L	13.47	13.72	13.97
	L1	3.80	3.85	4.00
	ØP	3.75	3.84	3.93
	Q	2.60	2.80	3.00
	Q1*		1.73REF	
	Q2*		1.83REF	

TO-263-3L Package Information

Package Outline



Recommend Soldering Footprint



DIMENSIONS: MILLIMETERS