

110V, 176A, 2.5mΩ N-channel Power SGT MOSFET

JMSH1102QC

Features

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

Parameters	Value	Unit
V_{DS}	110	V
$V_{GS(th)_{Typ}}$	3.1	V
$I_D(@V_{GS}=10V)$	176	A
$R_{DS(on)_{Typ}}$ $_{GS}$	2.5	mΩ

Applications

- Load fwitch
- PWM Application

Device	Marking	MSL	Form	Package	Tube(pcs)	Per Carton (pcs)
JMSH1102QC-U				TO-220-3L		

	Parameter		Value	
V	Drain-to-fource Voltge		110	
V_{GS}	Gate-to-fource Voltge		±20	V
I_D	Continuous Drain Current	$T = 25^{\circ}C$	176	A
		$T_C = 100^{\circ}C$	125	
	Pulsed Drain Current ⁽¹⁾			A
E	⁽²⁾		1488	
P_D		c		
		c		
T_J, T_C	Junction & fstorage Temperature Range		-55 to 150	°C

	⁽³⁾		

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

Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics					
V _{(BR)DSS}		110	-	-	V
I _{DSS}		-	-	1.0	μA
I _{GSS}		-	-	±100	nA
V _{GS(th)}		2.1	3.1	4.3	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽⁴⁾	-	2.5	3.5	mΩ
R _g	Gate Resistance	f = 1MHz	-	2.4	Ω
C _{iss}		7411	10375	14007	pF
C _{oss}		1067	1494	2017	pF
C _{rss}		23	32	43	pF
Q _g		108	152	205	nC
Q _{gs}		35	49	66	nC
Q _{gd}		24	34	46	nC
t _{d(on)}		-	44	-	ns
t _r		-	65	-	ns
t _{d(off)}		-	128	-	ns
t _f		-	77	-	ns
I _S		-	-	176	A
I _{SM}		-	-	706	A
V _{SD}		-	-	1.2	V
t _{rr}		72	101	136	ns
Q _{rr}	Body Diode Reverse Recovery Charge	-	324	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

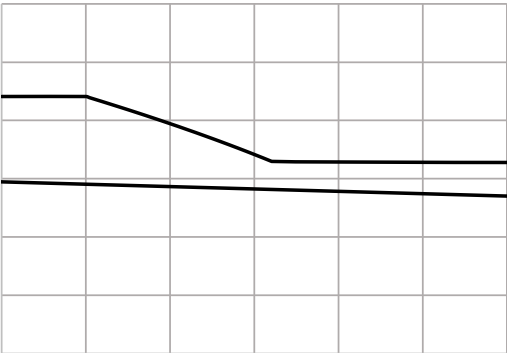
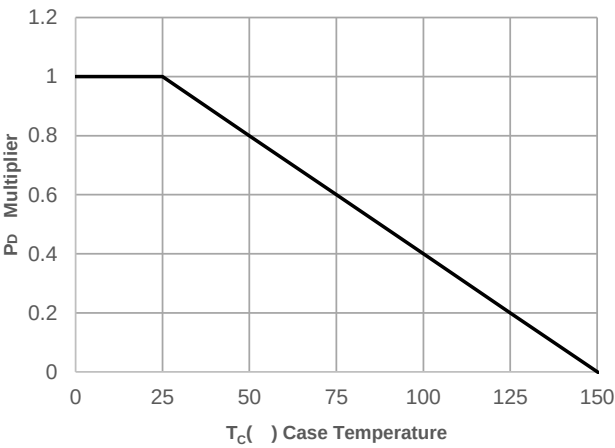
2. E_{AS} condition: Starting T_J=25C, V_{DD}=55V, V_{GS}=10V, R_G=25ohm, L=3mH, I_{AS}=31.5A, V_{DD}=0V during time in avalanche.

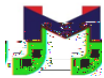
3. R is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.

4. Pulse Test: Pulse Width 0.5%.

Typical Performance Characteristics

Figure 1: Power De-rating





Typical Performance Characteristics

Figure 5: Output Characteristics

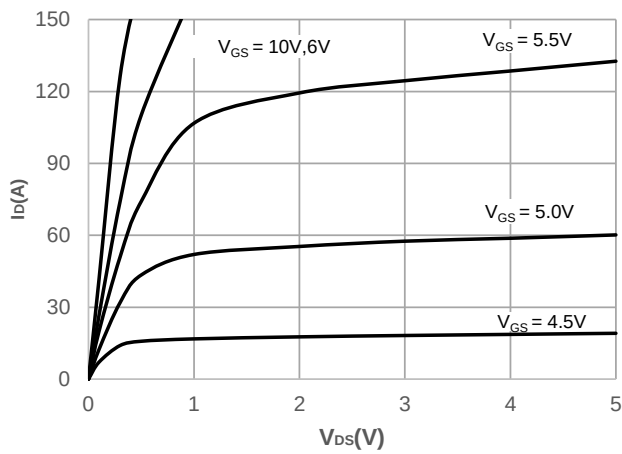


Figure 6: Typical Transfer Characteristics

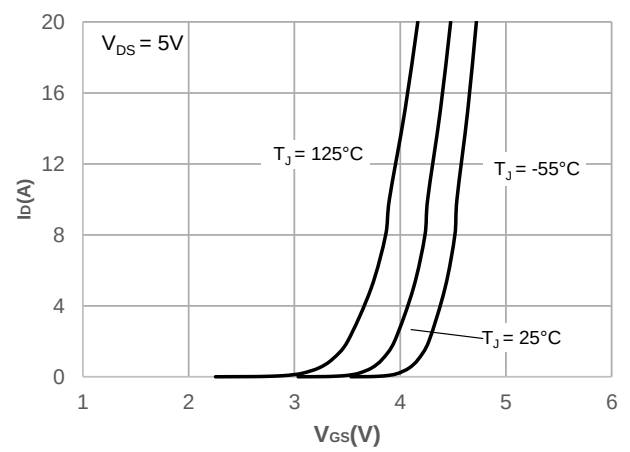


Figure 7: On-resistance vs. Drain Current

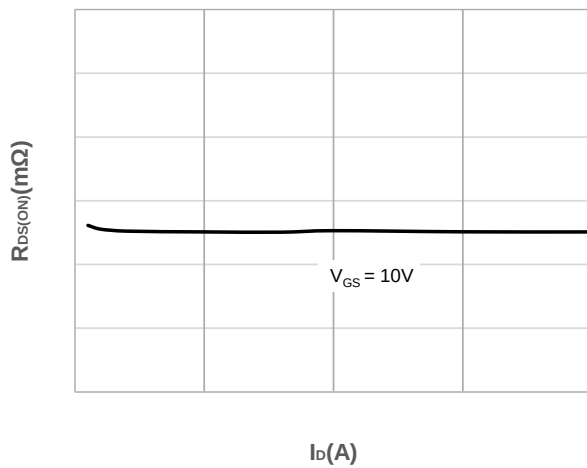


Figure 8: Body Diode Characteristics

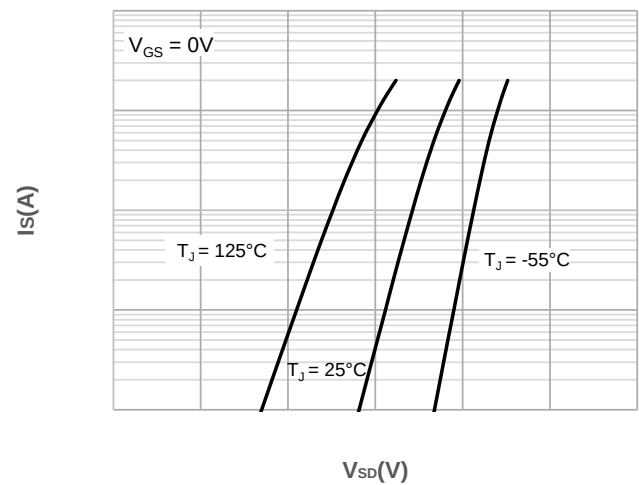


Figure 9: Gate Charge Characteristics

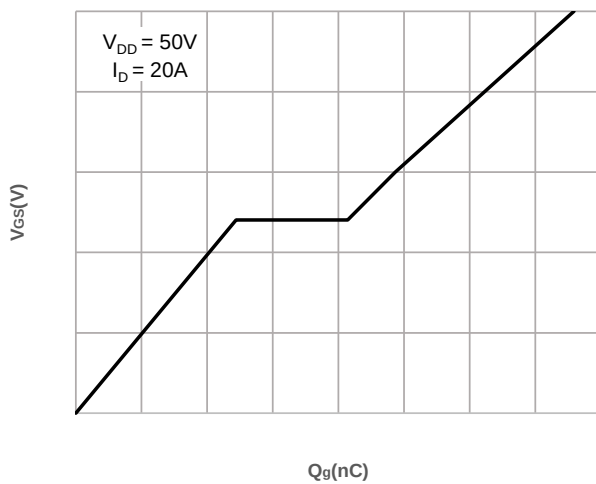
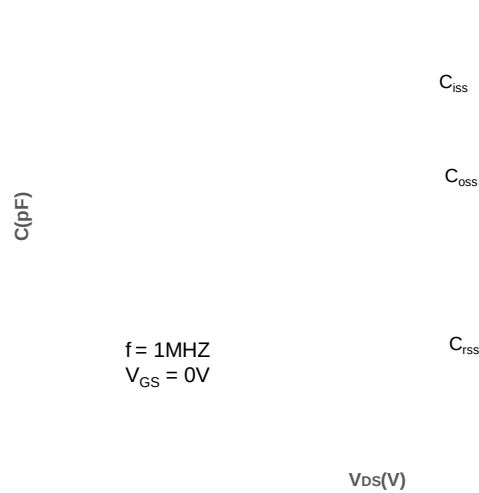
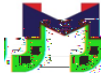


Figure 10: Capacitance Characteristics





Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

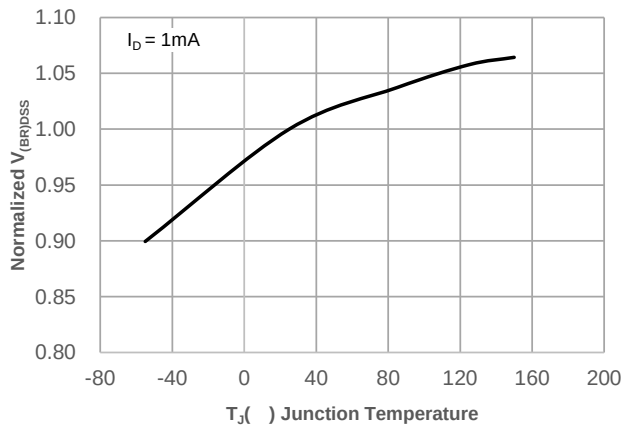


Figure 12: Normalized on Resistance vs. Junction Temperature

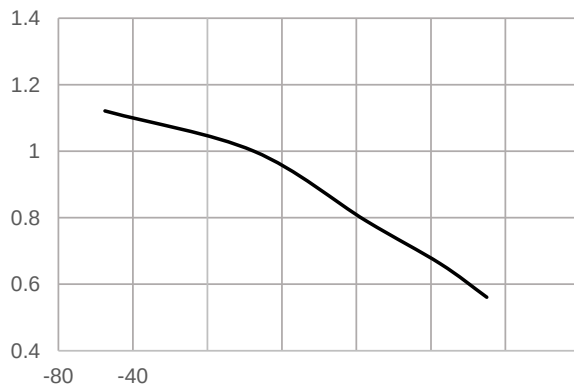
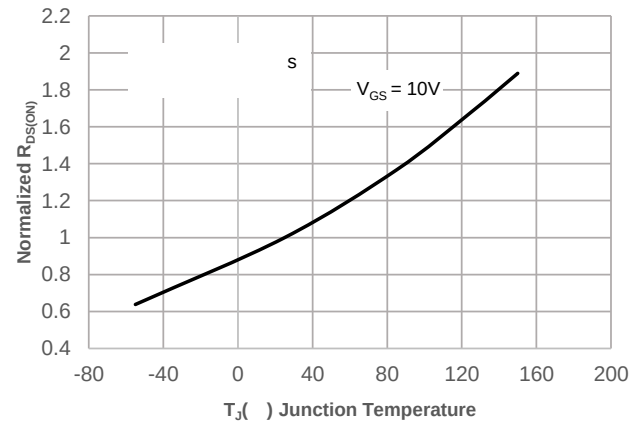


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

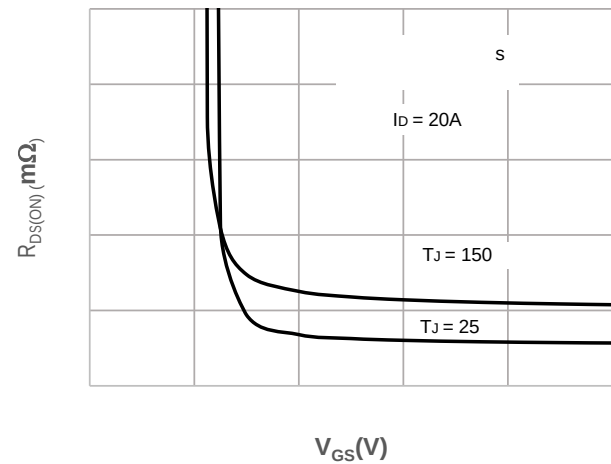
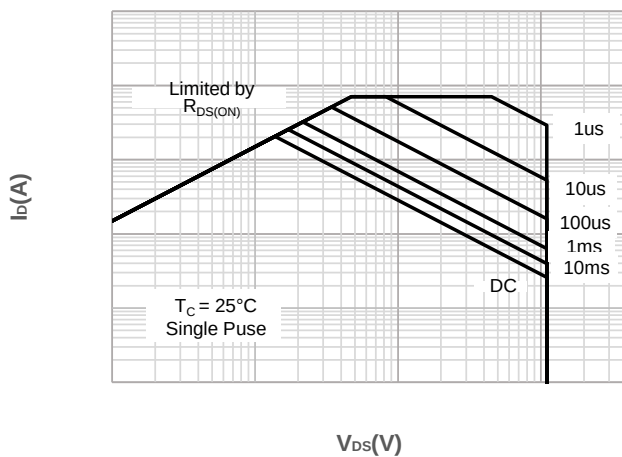


Figure 15: Maximum Safe Operating Area



Test Circuit

Package Mechanical Data(TO-220-3L)