40V, 160A, 2.2mΩ N-channel Power SGT MOSFET

JMSH04025K3LQ

Product Summary

Parameters	Value	Unit
V_{DSS}	40	V
$V_{GS(th)_Typ}$	2.8	V
I_D(@V_{GS}=10V)	160	A
$R_{DS(ON)_Typ}$(@V_{GS}=10V	2.2	m

Ordering Information

Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMSH04025K3LQ-13	SH040253LQ	1	Tape&Reel	TO-252-3L	5000	50000

Absolute Maximum Ratings (@ T_C

Symbol			Unit
V_{DS}			V
V_{GS}			V
		T_C = 25°C	
		T_C = 100°C	
I_{DM}			A
E_{AS}			mJ
		T_C = 25°C	
		T_C = 100°C	
T_J STG			°C

Symbol			Unit
$R_{\theta JA}$			
$R_{\theta JC}$			

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250 A, V_{GS} = 0V	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 32V, V_{GS} = 0V	-	-	1.0	
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 A	2.0	2.8	4.0	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 20A	-	2.2	2.5	m
Dynamic Characteristics						
R_g	Gate Resistance	f = 1MHz	-	1.9	-	
C_{iss}		V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	-	3690	5000	pF
C_{oss}			-	1022	1400	pF
C_{rss}			-	43	100	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 20V, I_D = 20A	-	51	-	nC
Q_{gs}	Gate Source Charge		-	18	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 20V I_D= 20A, R_{GEN} = 3	-	16	-	ns
t_r	Turn-On Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	36	-	ns
t_f	Turn-Off Fall Time		-	11	-	ns
I_S			-	-	160	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	640	A
V_{SD}	Body Diode Forward Voltage	V_{GS} = 0V, I_S = 20A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	21	42	62	ns
Qrr	Body Diode Reverse Recovery Charge		-	43	-	nC

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

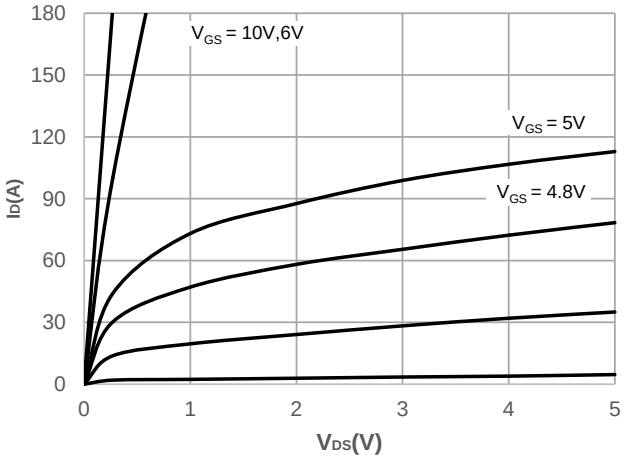
2. E_{AS} condition: Starting T_J=25C, V_{DD}=20V, V_{GS}=10V, R_G=25ohm, L=3mH, I_{AS}=18.9A, V_{DD}=0V during time in avalanche.

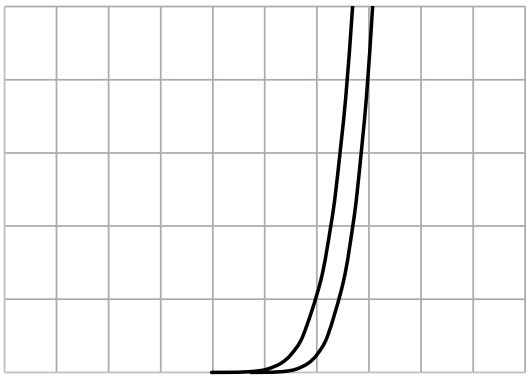
3. $R_{\theta JA}$ is measured with the device mounted on a $1inch^2$ pad of 2oz copper FR4 PCB.

4. Pulse Test: Pulse Width 300μs, Duty Cycle 0.5%.

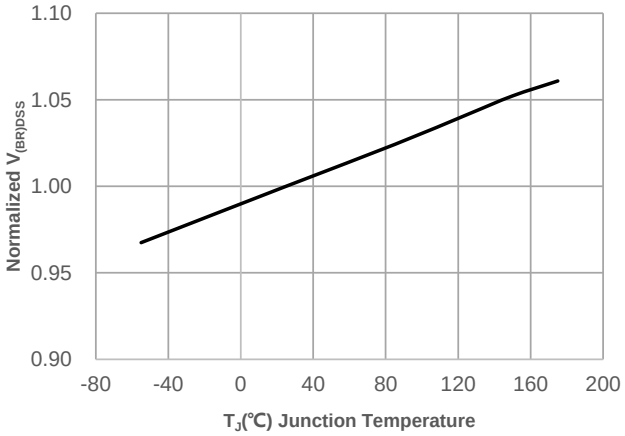
Typical Performance Characteristics

Figure 5: Output Characteristics

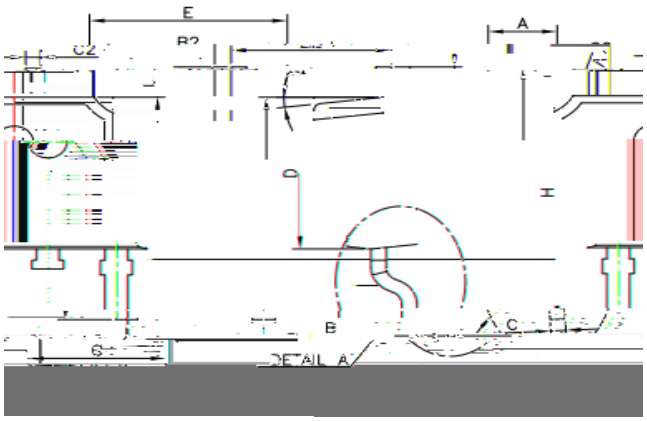


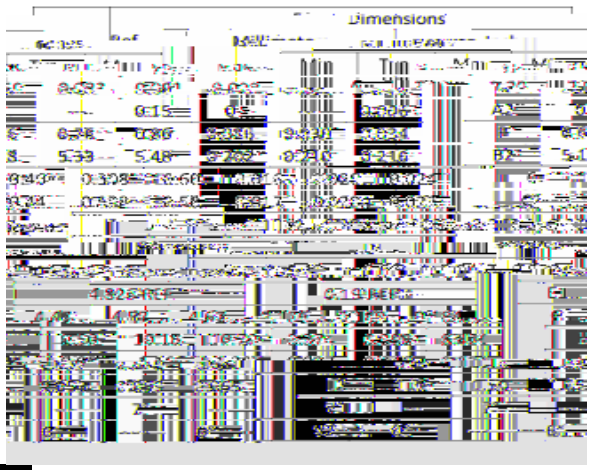


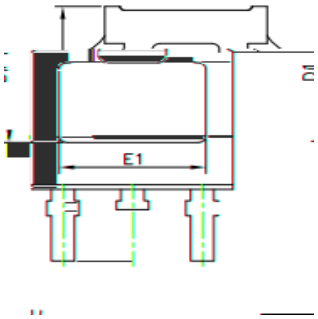
Typical Performance Characteristics



Package Mechanical Data(TO-252-3L)







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