JMSL0402AKQ

40V 1.9m N-Ch Power MOSFET

- Ultra-low $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant
- AEC-Q101 Qualified for Automotive Applications

Product Summary

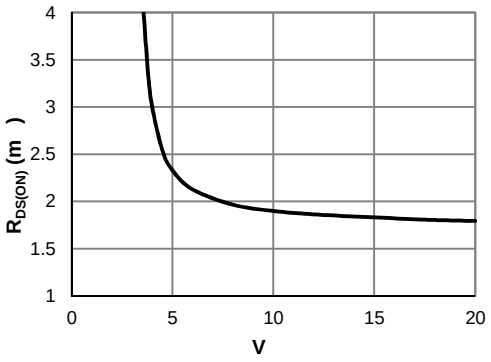
Parameter	Typ.	Unit
V_{DS}	40	V
$V_{GS(th)}$	1.5	V
I_D (@ V_{GS} = 10V) (1)	211	A
$R_{DS(ON)}$ (@ V_{GS} = 10V)	1.9	m
$R_{DS(ON)}$ (@ V_{GS} = 4.5V)	2.6	m

Ordering Information

Device	Package	# of Pins	Marking	MSL	T_J (°C)	Media	Quantity (pcs)
JMSL0402AKQ-13	TO-252-3L	3	SL0402AQ	1	-55 to 175	13-inch Reel	2500

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

Parameter		Symbol	Value	Unit
Drain-to-Source Voltage		V_{DS}	40	V
Gate-to-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (1)	T_C = 25°C	I_D	211	A
	T_C = 100°C		148	
Pulsed Drain Current (2)		I_{DM}	517	A
Avalanche Energy (3)		E_{AS}	338	mJ
Power Dissipation (4)	T_C = 25°C	P_D	187	W
	T_C = 100°C		93	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 175	°C



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 = 250 A, V_{GS} = 0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 32V, V_{GS} = 0V			1.0	A
		T_J = 55°C			5.0	
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 A	1.2	1.5	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 20A		1.9	2.4	m
		V_{GS} = 4.5V, I_D = 15A		2.6	3.4	m
Forward Transconductance	g_{FS}	V_{DS} = 5V, I_D = 20A		87		S
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V		0.66	1.0	V
Diode Continuous Current	I_S	T_C = 25°C			187	A
DYNAMIC PARAMETERS [5]						
Input Capacitance	C_{iss}			3252		pF
Output Capacitance	C_{oss}	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz		1888		pF
Reverse Transfer Capacitance	C_{rss}			55		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS}= 0V, f = 1MHz		2.9		
SWITCHING PARAMETERS [5]						
Total Gate Charge (@ V_{GS} = 10V)	Q_g			50		nC
Total Gate Charge (@ V_{GS} = 4.5V)	Q_g	V_{GS} = 0 to 10V		24		nC
Gate Source Charge	Q_{gs}	V_{DS} = 20V, I_D = 20A		9.5		nC
Gate Drain Charge	Q_{gd}			8.9		nC
Turn-On DelayTime	$t_{D(on)}$			9.5		ns
Turn-On Rise Time	t_r	V_{GS} = 10V, V_{DS} = 20V		28.0		ns
Turn-Off DelayTime	$t_{D(off)}$	R_L = 1.0 , R_{GEN} = 3		77		ns
Turn-Off Fall Time	t_f			91		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F = 20A, dI_F/dt = 100A/ s		42		ns
Body Diode Reverse Recovery Charge	Q_{rr}			24		nC

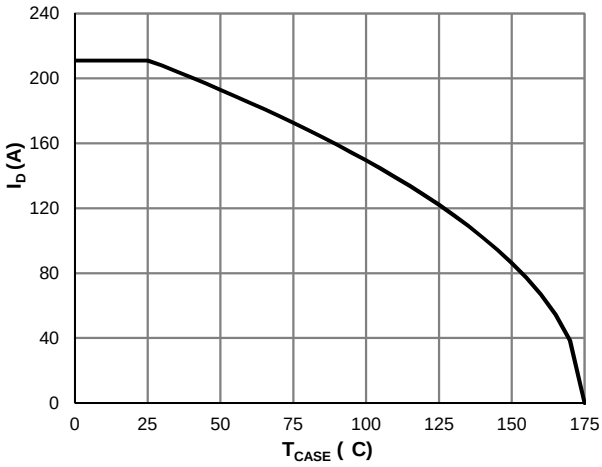
Parameter	Symbol	Unit
	R_{JA}	°C/W
	R_{JC}	°C/W

Notes:

5 25) C 20 6 This sing 7 7 Cap 2.4 4 Ct Ø d s q Ê Ê m s

Typical Electrical & Thermal Characteristics

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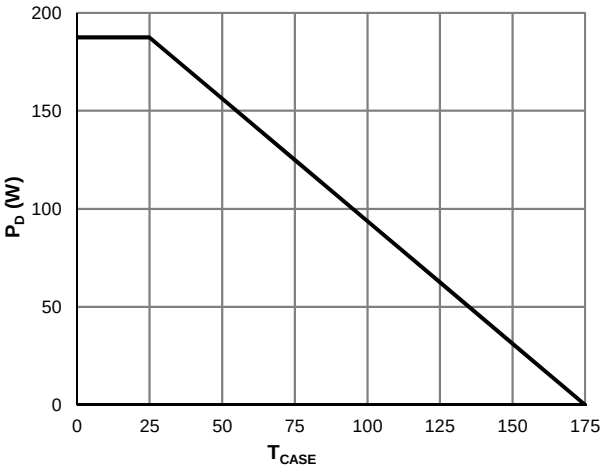


Figure 9: Current De-rating

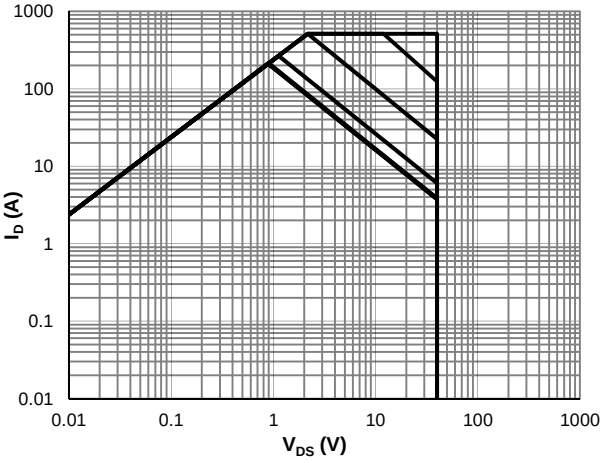
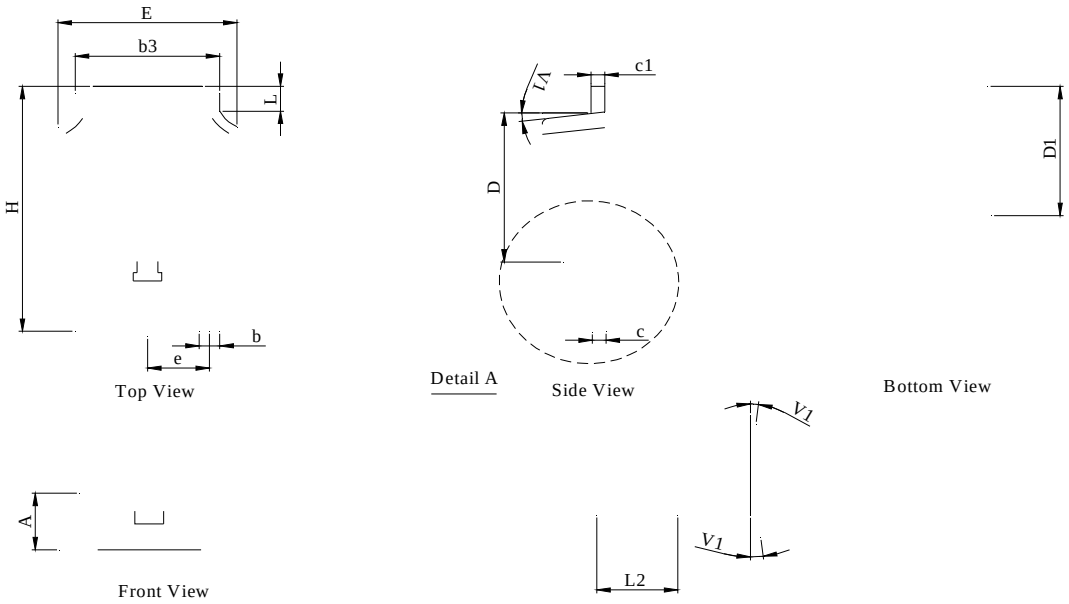


Figure 11: Maximum Safe Operating Area

Typical Electrical & Thermal Characteristics



TO-252-3L Package Information



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	-	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40		1.78
V1	7° REF		
V2	0°	-	6°