

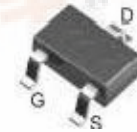
KBM2302CA

N-Channel Enhancement Mode MOSFET

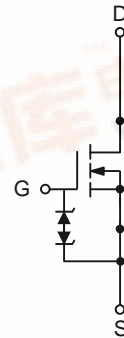
Features

- 20V/3.6 A ,
 - $R_{DS(ON)}=45m\Omega$ (typ.) @ $V_{GS}=10V$
 - $R_{DS(ON)}=65m\Omega$ (typ.) @ $V_{GS}=4.5V$
 - $R_{DS(ON)}=80m\Omega$ (typ.) @ $V_{GS}=2.5V$
 - $R_{DS(ON)}=95m\Omega$ (typ.) @ $V_{GS}=1.8V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

Pin Description



Top View of SOT-23




N-Channel MOSFET

Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems

Ordering and Marking Information

<p>KBM2302C □□-□□□</p>  <ul style="list-style-type: none"> □□□ Lead Free Code □□□ Handling Code □□□ Temp. Range □□□ Package Code 	<p>Package Code A : SOT-23</p> <p>Operating Junction Temp. Range C : -55 to 150 °C</p> <p>Handling Code TR : Tape & Reel</p> <p>Lead Free Code L : Lead Free Device</p>
<p>KBM2302C A : 026X</p>	<p>X - Date Code</p>

Cover Tape Dimensions

Application	Devices Per Reel
SOT23-3	3000

KBM2302CA

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

Symbol	Parameter	Rating	Unit	
V _{DSS}	Drain-Source Voltage	20	V	
V _{GSS}	Gate-Source Voltage	±12		
I _D *	Continuous Drain Current	V _{GS} =10V	A	
I _{DM} *	300μs Pulsed Drain Current			3.6
I _S *	Diode Continuous Forward Current	11	A	
T _J	Maximum Junction Temperature	1	°C	
T _{STG}	Storage Temperature Range	-55 to 150		
P _D *	Maximum Power Dissipation	T _A =25°C	0.83	W
		T _A =100°C	0.3	
R _{θJA} *	Thermal Resistance-Junction to Ambient	150	°C/W	

Notes:

*Surface Mounted on 1in² pad area, t ≤ 10sec.

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	KBM2302CA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V T _J =85°C			1	μA
					30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.75	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V			±10	μA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =6A		45	60	mΩ
		V _{GS} =4.5V, I _{DS} =3A		65	80	
		V _{GS} =2.5V, I _{DS} =2A		80	95	
		V _{GS} =1.8V, I _{DS} =1A		95	150	
V _{SD} ^a	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V		0.7	1.3	V
Gate Charge Characteristics^b						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =3.6A		6	8	nC
Q _{gs}	Gate-Source Charge			0.7		
Q _{gd}	Gate-Drain Charge			3		

KBM2302CA

Electrical Characteristics (Cont.) ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	KBM2300CA			Unit
			Min.	Typ.	Max.	
Dynamic Characteristics^b						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		6		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz		586		pF
C_{oss}	Output Capacitance			101		
C_{rss}	Reverse Transfer Capacitance			90		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=10V, R_L=10\Omega,$ $I_{DS}=1A, V_{GEN}=4.5V,$ $R_G=6\Omega$		5	10	ns
t_r	Turn-on Rise Time			15	28	
$t_{d(OFF)}$	Turn-off Delay Time			26	48	
t_f	Turn-off Fall Time			15	28	
t_{rr}	Reverse Recovery Time	$I_{SD}=6A, di_{SD}/dt=100A/\mu s$		21		ns
Q_{rr}	Reverse Recovery Charge			8		nC

Notes:

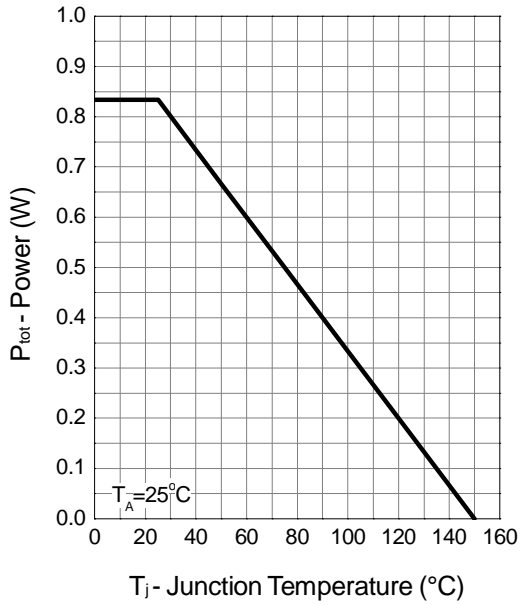
a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

b : Guaranteed by design, not subject to production testing.

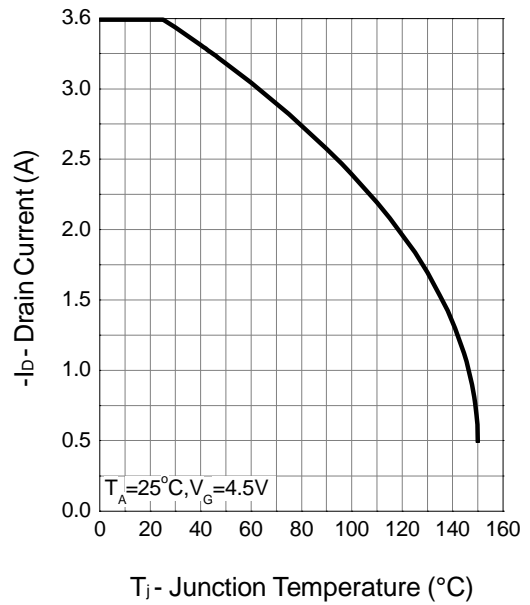
KBM2302CA

Typical Characteristics

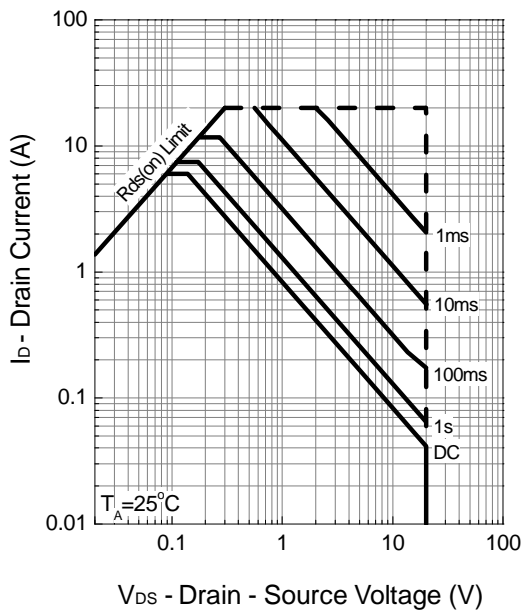
Power Dissipation



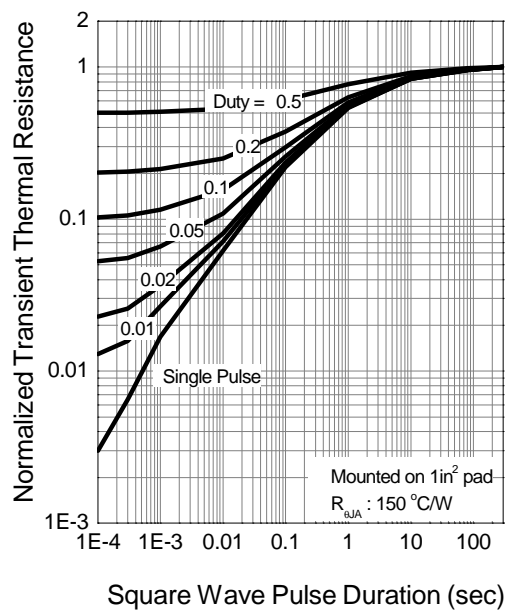
Drain Current



Safe Operation Area



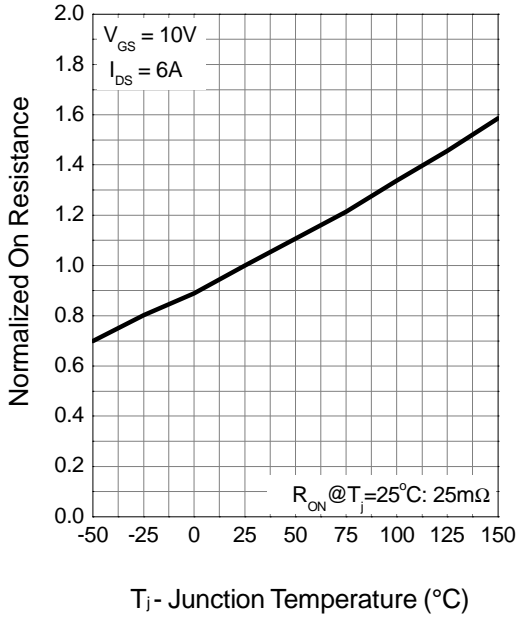
Thermal Transient Impedance



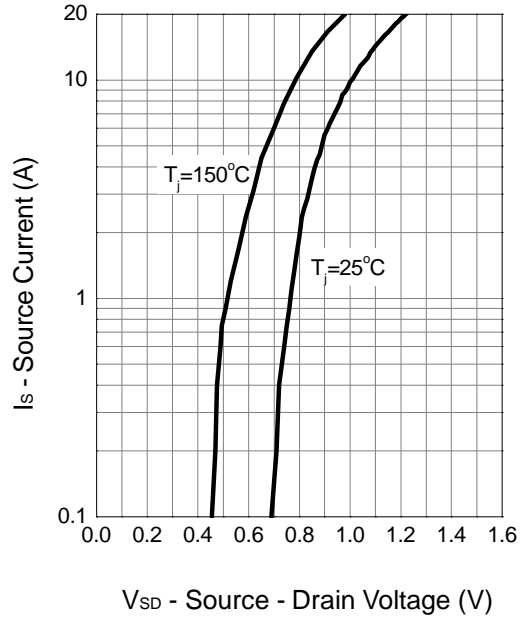
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Typical Characteristics (Cont.)

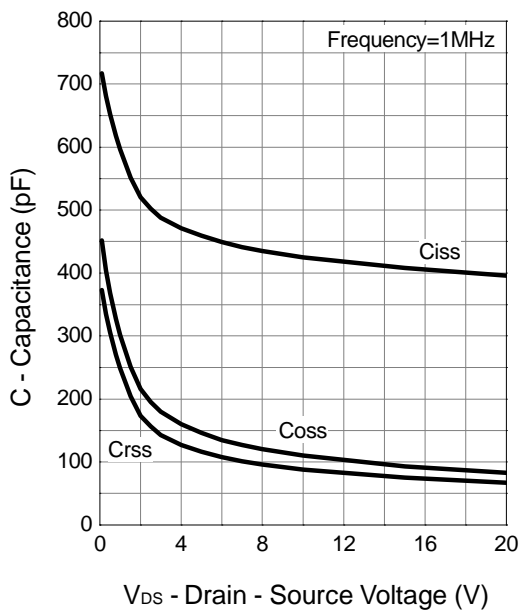
Drain-Source On Resistance



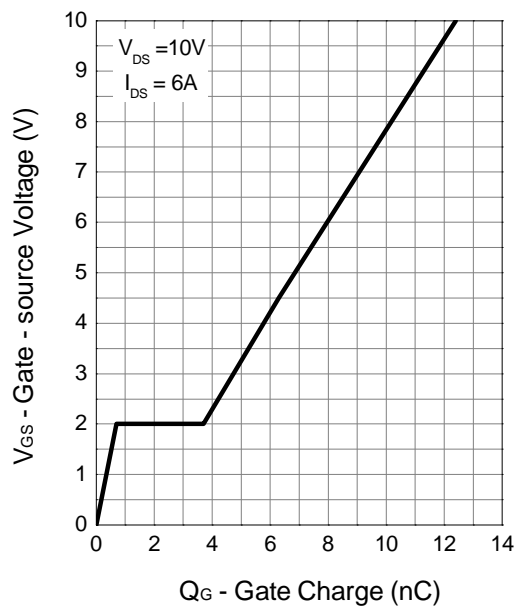
Source-Drain Diode Forward



Capacitance



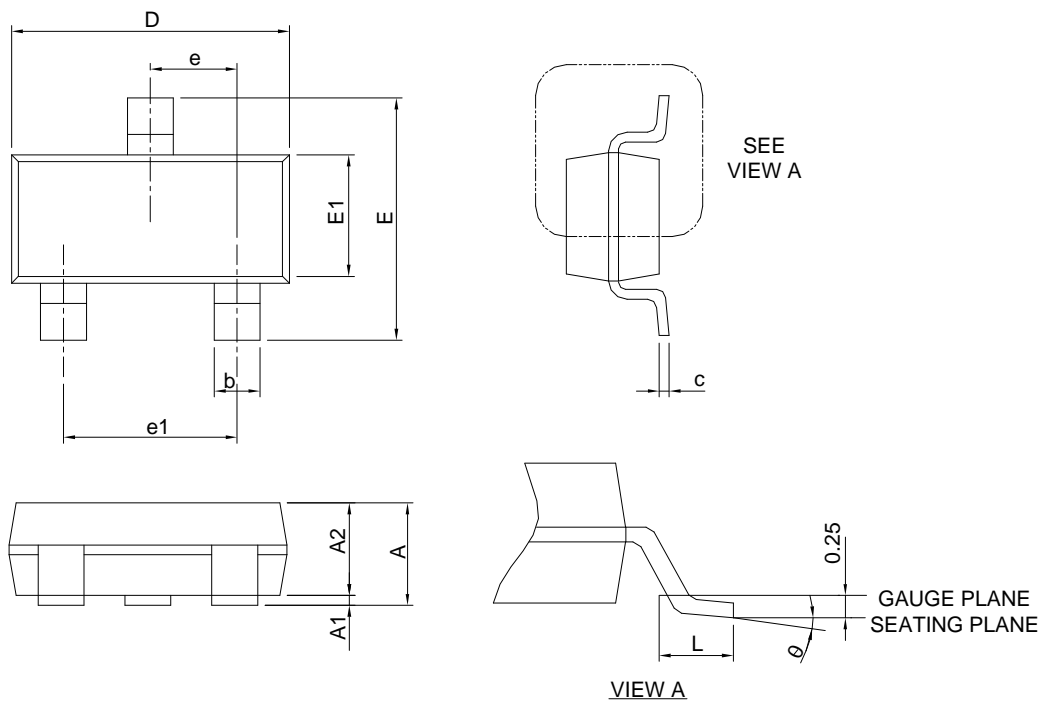
Gate Charge



KBM2302CA

Packaging Information

SOT23-3



SYMBOL	SOT23-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.45		0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.90 BSC		0.114 BSC	
E	2.80 BSC		0.110 BSC	
E1	1.60 BSC		0.063 BSC	
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°