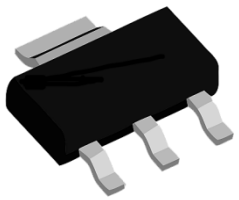
Description

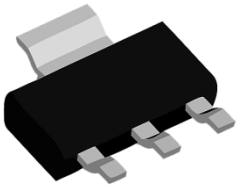
This N-channel MOSFETS use advanced trench technology and design to provide excellent RDS(on) with low gate charge. It can be used in a wide variety of applications.

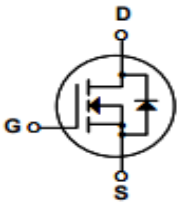
Features

BVDSS	RDSON	ID
60V	0.15Ω	2.6A

1) Low gate charge.
2) Green device available.
3) Advanced high cell denity trench technology for ultra RDS(ON)
4) Excellent package for good heat dissipation.







SOT-223

Absolute Maximum Ratings T_C=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	2.6	A
	Continuous Drain Current-T=100℃	1.7	
	Pulsed Drain Current2	10.4	
EAS	Single Pulse Avalanche Energy3	60	mJ
PD	Power Dissipation4	1.8	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
RθJC	Thermal Resistance ,Junction to Case1	—	℃/W
RθJA	Thermal Resistance, Junction to Ambient1	—	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMT318N	KSMT318N	SOT-223

Electrical Characteristics T_C=25℃ unless otherwise noted

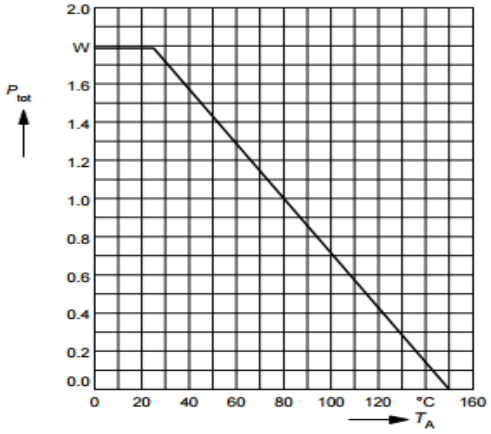
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{DS}=0V,I_D=250μA	60	—	—	v
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=0V, V_{DS}=32V	—	—	0.1	μA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=±20V, V_{DS}=0A	—	10	100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{DS}=VDS, I_D=250μA	—	—	—	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{DS}=10V,I_D=6A	—	0.12	0.15	Ω
		V_{DS}=2.5V,I_D=5A	—	0.07	0.09	
G_{FS}	Forward Transconductance	V_{DS}=5V,I_D=12A	2.4	5.6	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	—	300	380	pF
C_{oss}	Output Capacitance		—	90	120	
C_{rss}	Reverse Transfer Capacitance		—	50	65	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, V_{GS}=10V,R_{GEN}=3.3Ω	—	12	20	ns
t_r	Rise Time		—	15	25	ns
$t_{d(off)}$	Turn-Off Delay Time		—	20	30	ns
t_f	Fall Time		—	15	25	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=20V, I_D=6A	—	0.4	0.6	nC
Q_{gs}	Gate-SourceCharge		—	7	10	nC
Q_{gd}	Gate-Drain “Miller” Charge		—	14	20	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode ForwardVoltage[2]	V_{GS}=0V,I_S =1A	—	0.95	—	V
t_{rr}	Reverse Recovery Time	I_F=7A,di/dt=100A/μS	—	50	75	ns
Q_{rr}	Reverse Recovery Charge		—	0.1	0.15	nC

Notes:

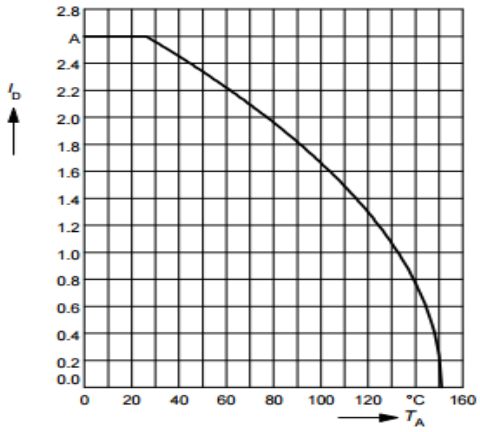
1. The data tested by surface mounted on a 1 inch² FR-4 board 2OZ copper.
2. The data tested by pulse width≤300us,duty cycle≤2%
3. The EAS data shows Max.rating.The test condition is V_{DD}=25v,V_{GS}=10V,L=0.1mH,i_{AS}=17.8A
4. The power dissipation is limited by 150℃ junction temperature.

Typical Characteristics T_J=25℃ unless otherwise noted

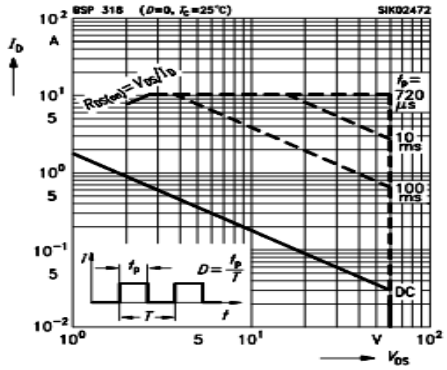
Power dissipation
$P_{tot} = f(T_A)$



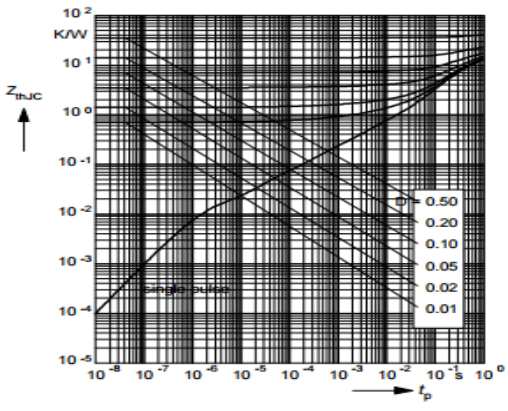
Drain current
$I_D = f(T_A)$
parameter: $V_{GS} \geq 4$ V



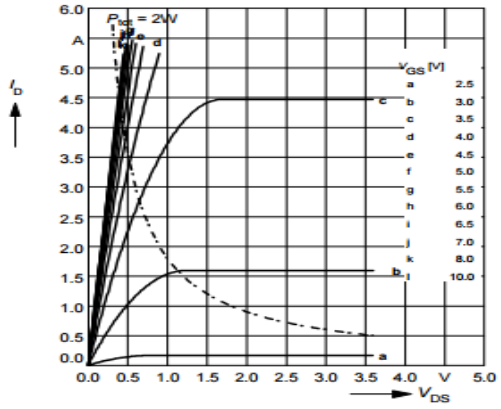
Safe operating area I_D=f(V_{DS})
parameter : D = 0, T_C=25°C



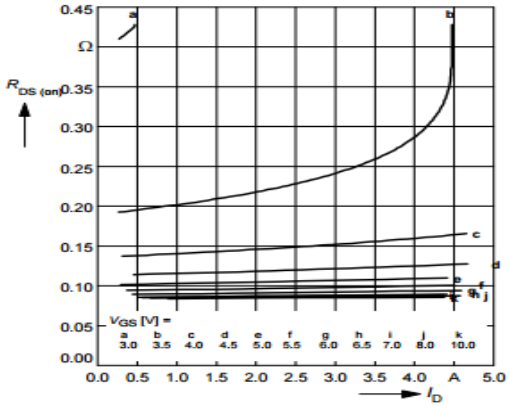
Transient thermal impedance
$Z_{th\ JA} = f(t_p)$
parameter: $D = t_p / T$



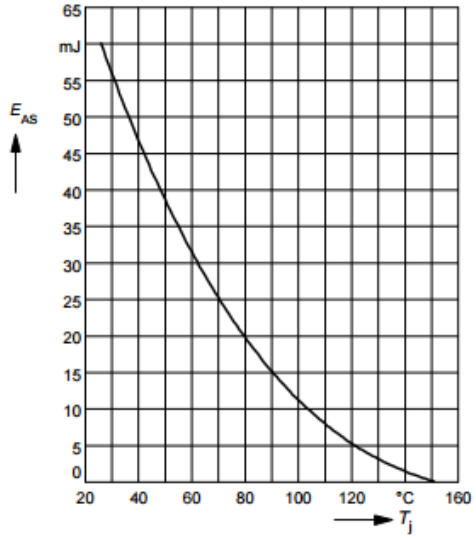
Typ. output characteristics
$I_D = f(V_{DS})$
parameter: t_p = 80 µs



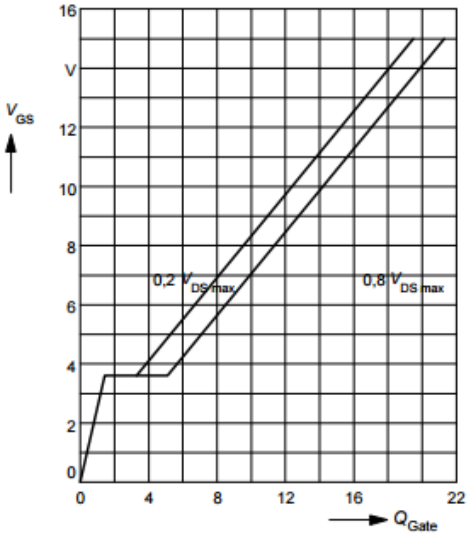
Typ. drain-source on-resistance
$R_{DS\ (on)} = f(I_D)$
parameter: t_p = 80 µs, T_j = 25 °C



Avalanche energy $E_{AS} = f(T_j)$
parameter: I_D = 2.6 A, V_{DD} = 25 V
R_{GS} = 25 Ω, L = 10 mH



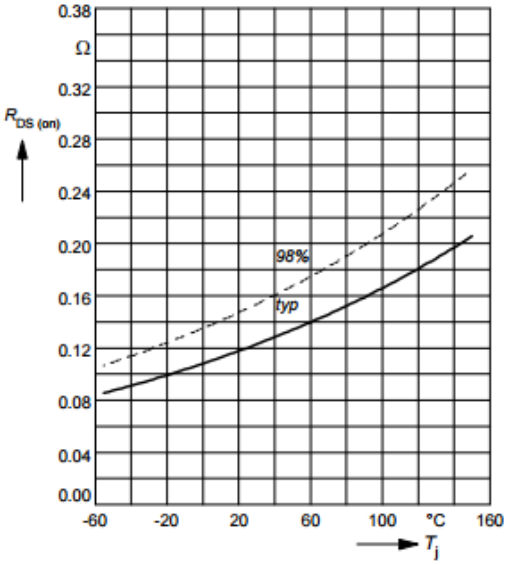
Typ. gate charge
$V_{GS} = f(Q_{Gate})$
parameter: $I_{D\ puls}$ = 3 A



Drain-source on-resistance

$R_{DS\ (on)} = f(T_j)$

parameter: I_D = 2.6 A, V_{GS} = 4.5 V



Gate threshold voltage

$V_{GS(th)} = f(T_j)$

parameter: V_{GS}=V_{DS}, I_D = 20 µA