



SOT-23-6L Plastic-Encapsulate MOSFETS

MK6400

Single N-Channel 30-V(D-S) MOSFET

V(BR)DSS	RDS(on)MAX	ID
30 V	28mΩ@10V	6.9A
	33mΩ@4.5V	
	52mΩ@2.5V	

FEATURE:

※ TrenchFET Power MOSFET

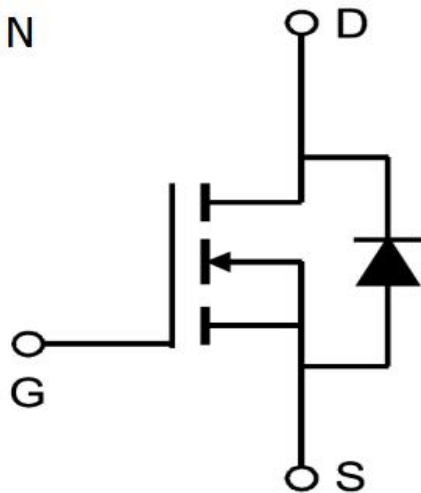
General Description :

The MK6400 uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications

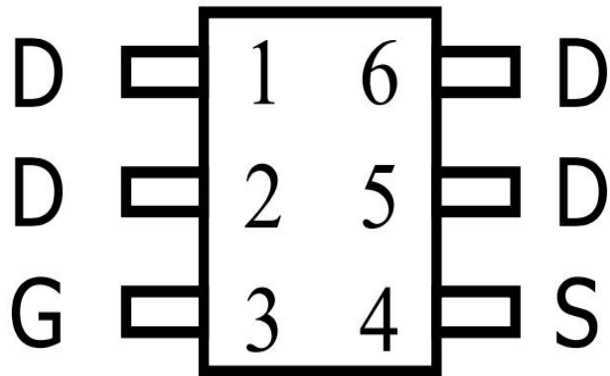
MARKING:

D06A XX

Equivalent Circuit :



SOT-23-6L



Maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	30	V
Gate-Source Voltage	VGS	±12	
Continuous Drain Current	ID	6.9	A
Pulsed Diode Current	IDM	35	
Continuous Source-Drain Current(Diode Conduction)	IS	2	
Power Dissipation	PD	2	W
Thermal Resistance from Junction to Ambient (t≤10s)	RθJA	110	°C/W
Operating Junction	TJ	150	°C
Storage Temperature	TSTG	-55~+150	°C



MOSFET ELECTRICAL CHARACTERISTICS

Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

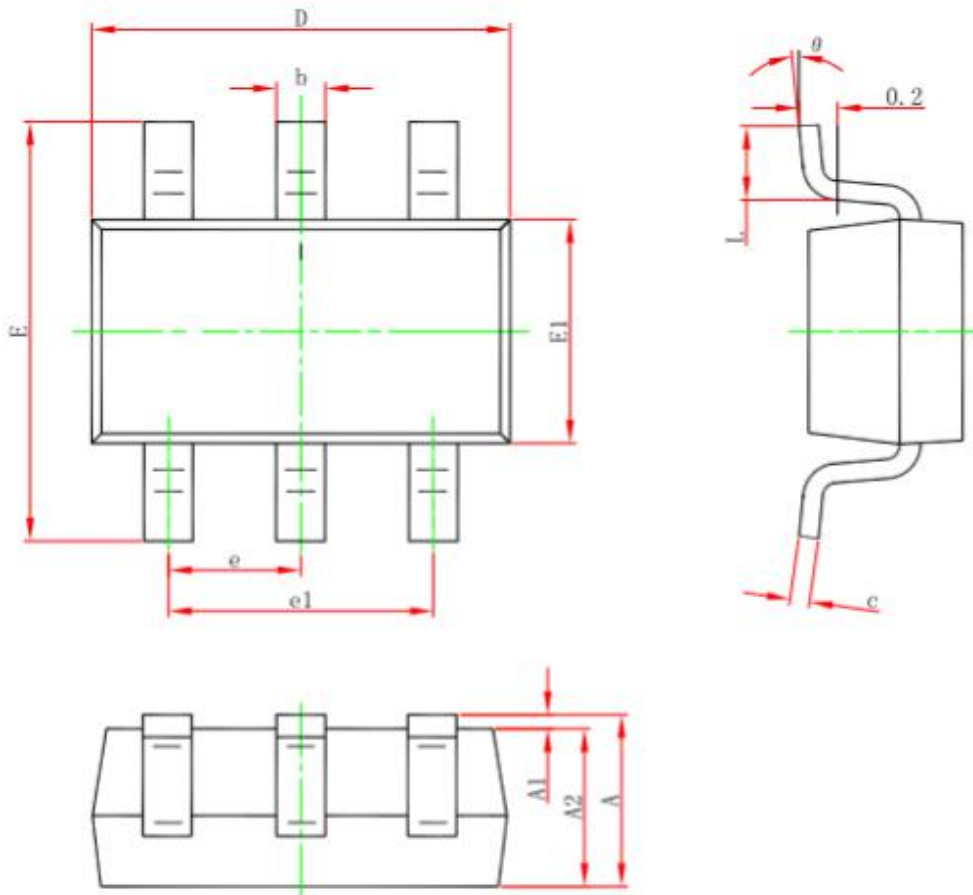
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	30			V
Gate-source threshold voltage	VGS(th)	VDS =VGS, ID = 250μA	0.65		1.45	V
Gate-body leakage current	IGSS	VDS =0V, VGS = ±12V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 30V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 6.9A		24	28	mΩ
		VGS = 4.5V, ID = 6A		27.5	33	mΩ
		VGS = 2.5V, ID = 5A			52	mΩ
Forward transconductance	gfs	VDS = 5V, ID = 6.9A		33		S
Diode forward voltage	VSD	IS= 1A,VGS=0V		0.7	1	V
Maximum Body-Diode Continuous Current	IS				2	A
Dynamic						
Input capacitance	Ciss	VDS = 15V, VGS =0V, f=1MHz		630		pF
Output capacitance	Coss			75		pF
Reverse transfer capacitance	Crss			50		pF
Total gate charge	Qg	VDS = 15V, VGS = 4.5V, ID = 6.9A		6	7	nC
Gate-source charge	Qgs			1.3		nC
Gate-drain charge	Qgd			1.8		nC
Gate resistance	Rg	f=1MHz		3	4.5	Ω
Switching						
Turn-on delay time	td(on)	VDS= 15V RL= 2.2Ω, ID =6.9A, VGS= 10V,Rg=3Ω		3		ns
Rise time	tr			2.5		ns
Turn-off delay time	td(off)			25		ns
Fall time	tf			4		ns
Body Diode Reverse Recovery Time	Trr	IF= 6.9A, di/dt=100A/μs		8.5		ns
Body Diode Reverse Recovery Charge	Qrr	IF= 6.9A, di/dt=100A/μs		2.6		nC

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 10 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



SOT-23-6L PACKAGE OUTLINE DIMENSIONS:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



Typical Electrical Thermal Characteristics:

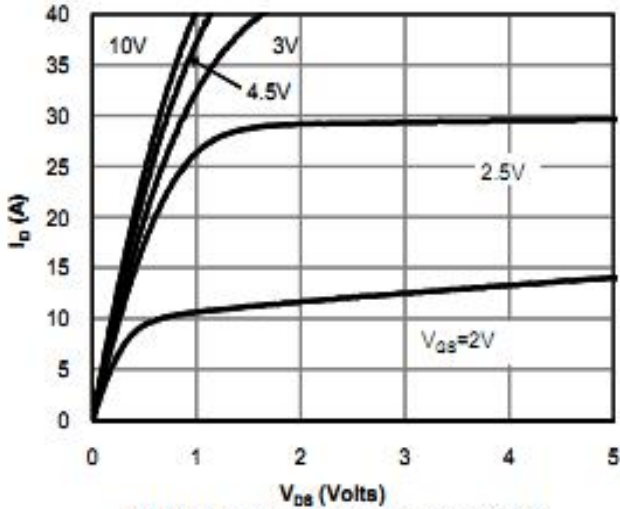


Fig 1: On-Region Characteristics (Note E)

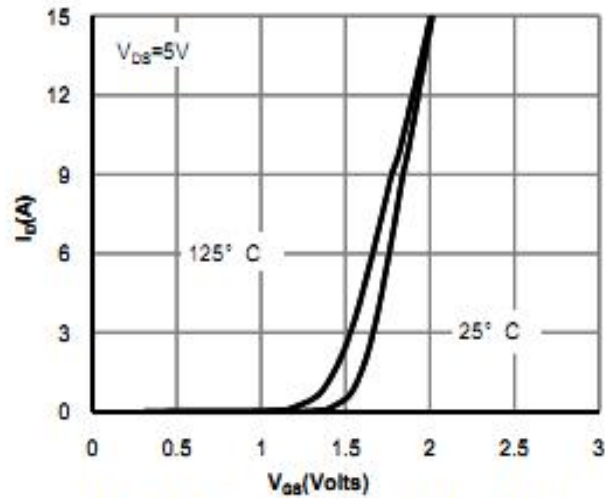


Figure 2: Transfer Characteristics (Note E)

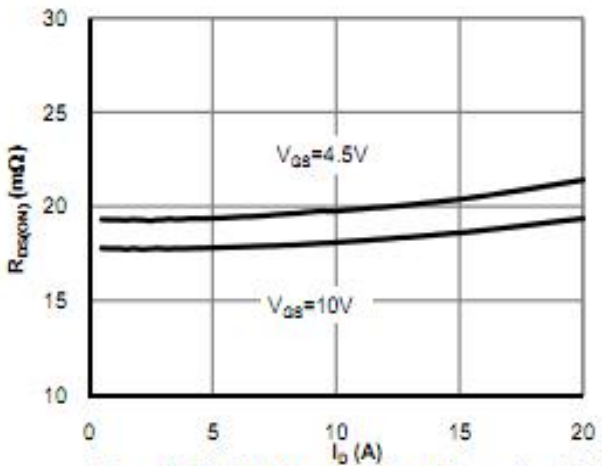


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

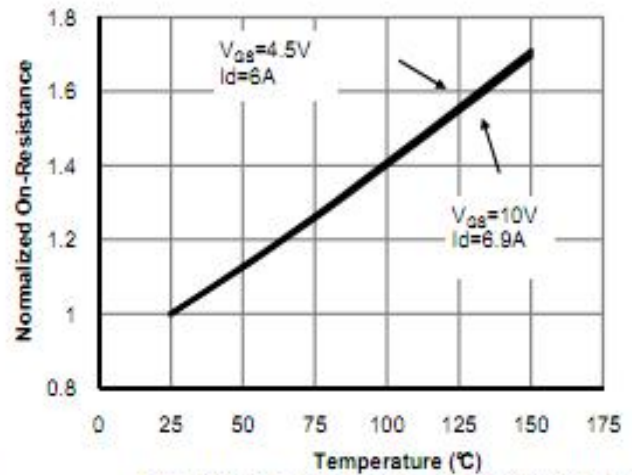


Figure 4: On-Resistance vs. Junction Temperature (Note E)

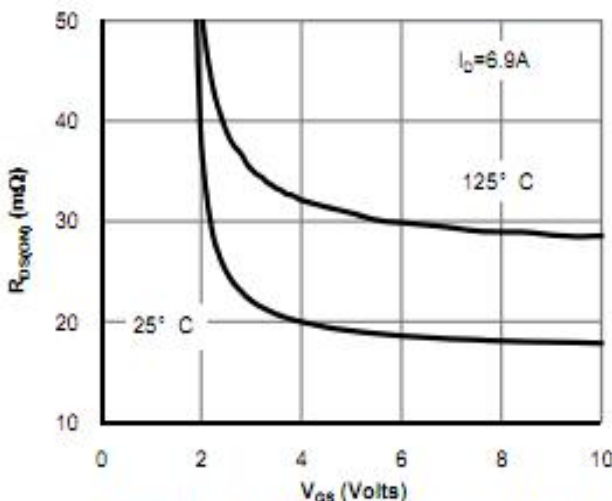


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

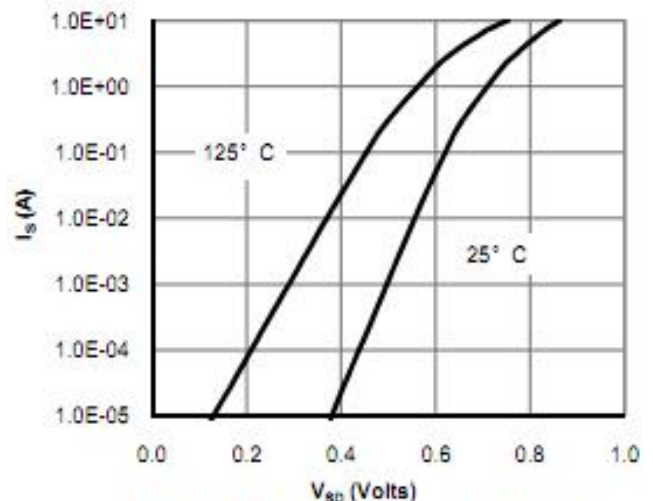


Figure 6: Body-Diode Characteristics (Note E)



Typical Electrical Thermal Characteristics:

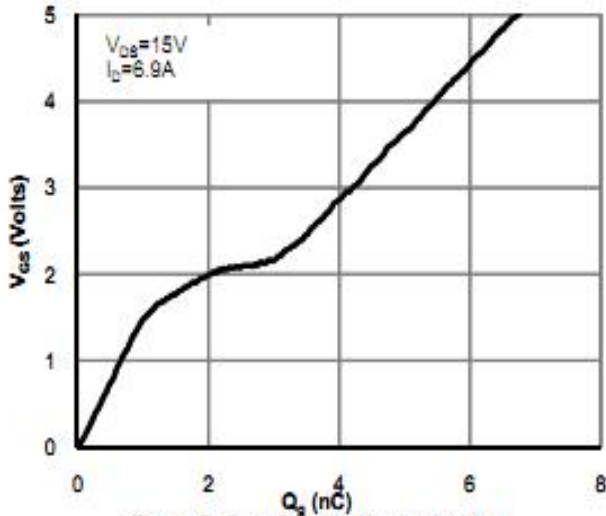


Figure 7: Gate-Charge Characteristics

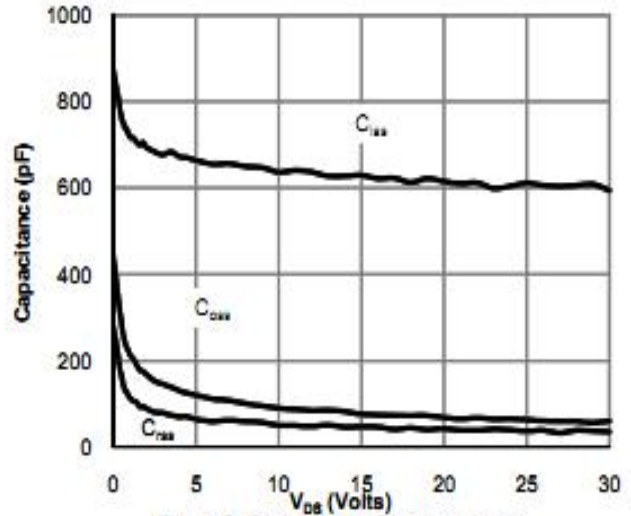


Figure 8: Capacitance Characteristics

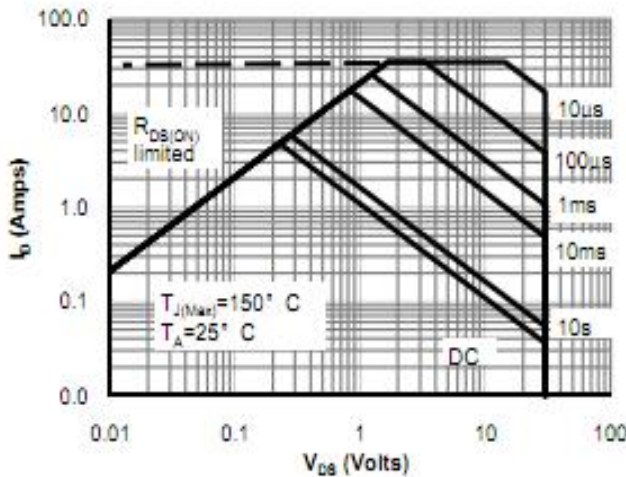


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

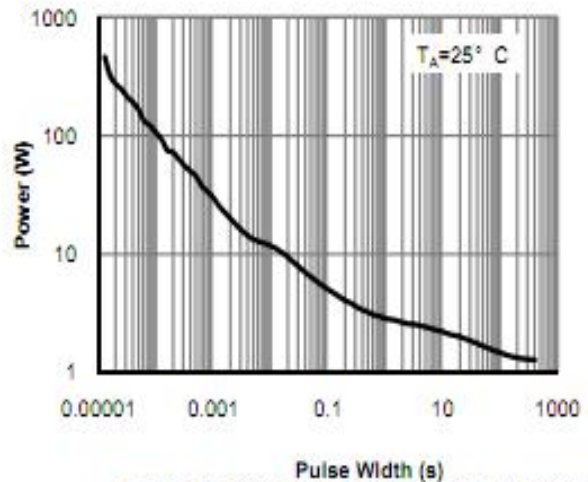


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

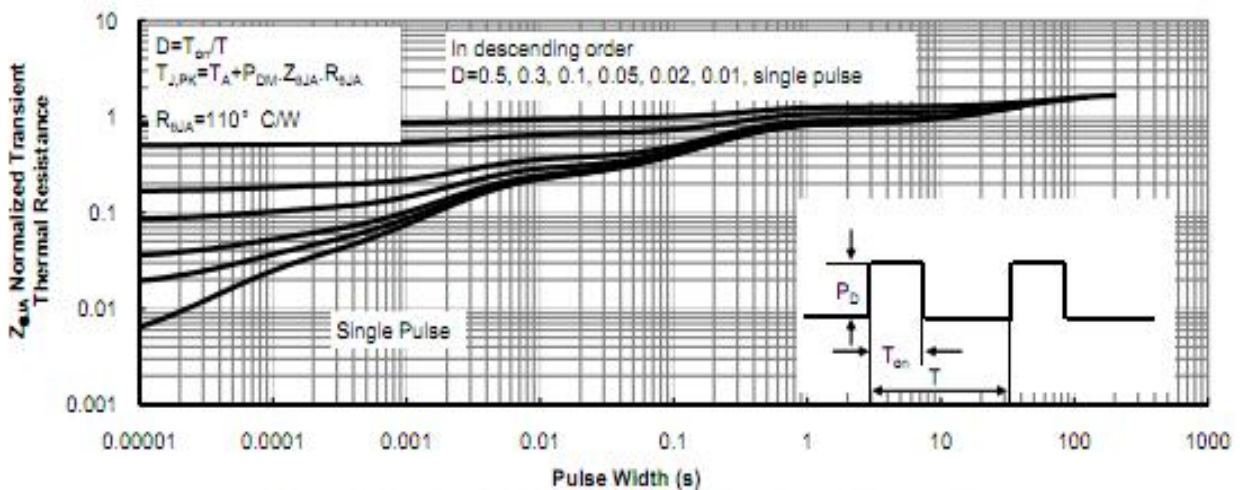


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)