SHENZHEN MENGKE ELECTRONICS TECHNOLOGY CO.,LTD
SOT-23-6L Plastic-Encapsulate MOSFETS

MK637N Single N-Channel 20-V(D-S) MOSFET
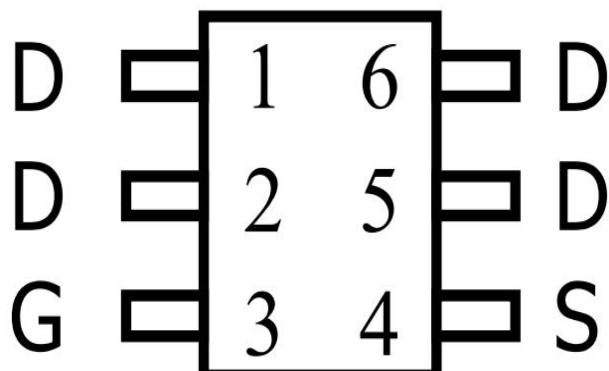
| V(BR)DSS	RDS(on)MAX	ID
20 V	24mΩ@4.5V 32mΩ@2.5V	6.2A

FEATURE:

● Fast switching speed.

● High performance trench technology for extremely low RDS(ON).

MARKING: 637 MK

Equivalent Circuit :

General Description :

This N-Channel 2.5V specified MOSFET is produced using Fairchild Semiconductor's advanced PowerTrench process that has been especially tailored to minimize on-state resistance and yet maintain low gate charge for superior switching performance.

SOT-23-6L

Maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	20	V
Gate-Source Voltage	VGS	±12	
Continuous Drain Current	ID	6.2	A
Pulsed Diode Curren	IDM	20	
Continuous Source-Drain Current(Diode Conduction)	IS	1.3	
Power Dissipation	PD	1.6	W
Thermal Resistance from Junction to Ambient (t≤10s)	RθJA	78	℃/W
Operating Junction	TJ	150	℃
Storage Temperature	TSTG	-55~+150	℃

MOSFET ELECTRICAL CHARACTERISTICS

**Static Electrical Characteristics (Ta = 25 ℃ Unless Otherwise Noted)**
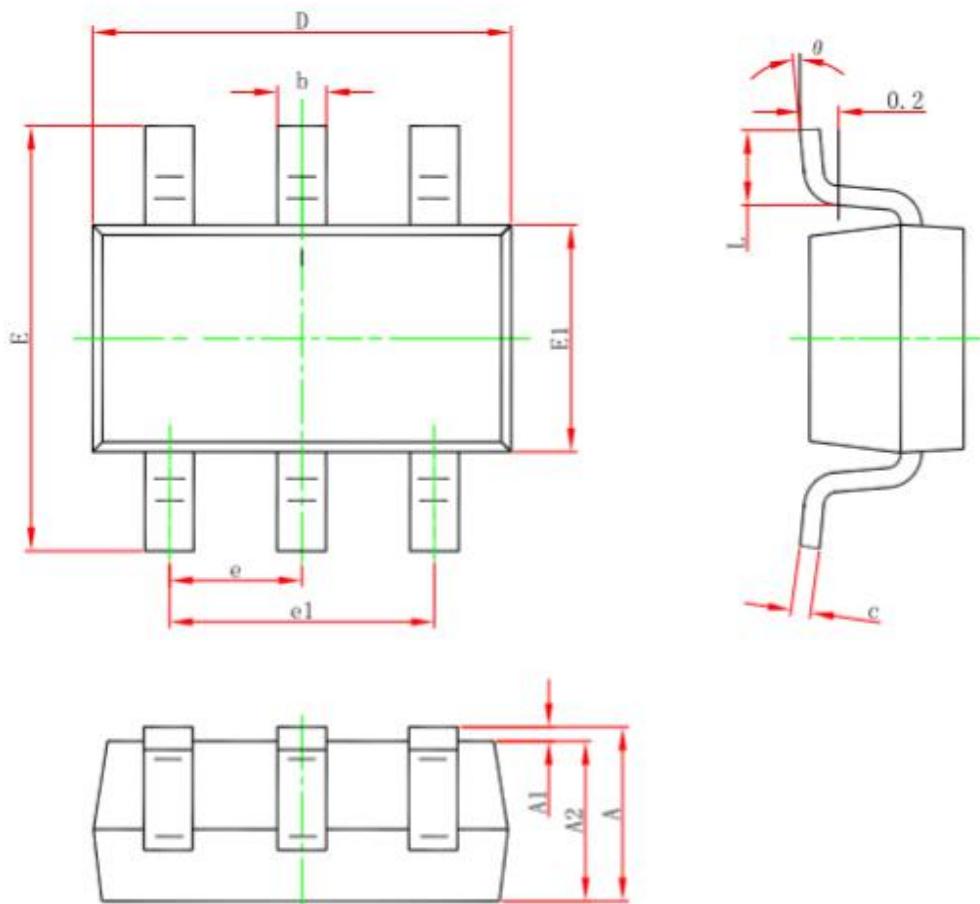
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	20			V
Gate-source threshold voltage	VGS(th)	VDS =VGS, ID = 250μA	0.4	0.75	1	V
Gate-body leakage current	IGSS	VDS =0V, VGS = ±12V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 16V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 4.5V, ID = 6A		18.5	24	mΩ
		VGS = 2.5V, ID = 5A		23.5	32	mΩ
On-State Drain Current	ID(on)	VGS = 4.5 V, VDS = 5 V	10			A
Forward transconductancea	gfs	VDS = 5V, ID = 6.2A		36		S
Diode forward voltage	VSD	IS= 1A,VGS=0V	0.5	0.8	1.3	V
Maximum Body-Diode Continuous Current	IS				1.3	A
Dynamic						
Input capacitance	Ciss	VDS = 10V, VGS =0V, f=1MHz		1125		pF
Output capacitance	Coss			290		pF
Reverse transfer capacitanceb	Crss			145		pF
Total gate charge	Qg	VDS = 5V, VGS = 4.5V, ID = 6.2A		10.5		nC
Gate-source charge	Qgs			1.5		nC
Gate-drain charge	Qgd			2.2		nC
Gate resistance	Rg	f=1MHz		2.2		Ω
Switchingb						
Turn-on delay time	td(on)	VDS= 5V RL= 3Ω, ID =6.2A, VGS= 4.5V,Rg=6Ω		9		ns
Rise time	tr			13		ns
Turn-off delay time	td(off)			26		ns
Fall time	tf			11		ns

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：
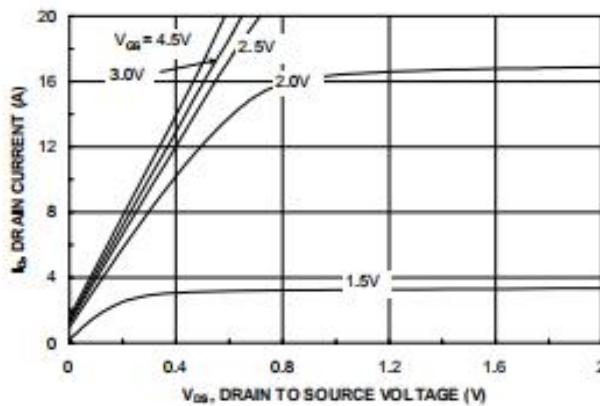
Figure 1. On-Region Characteristics.
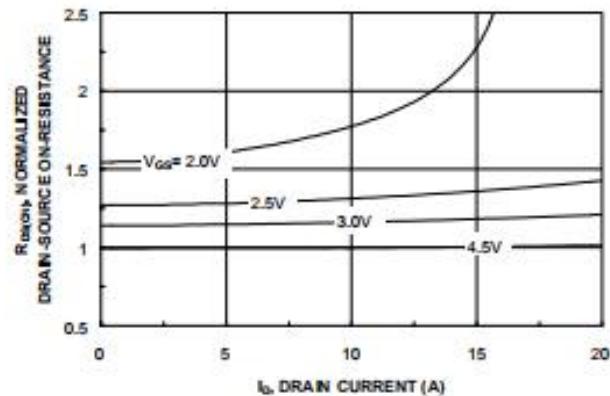
Figure 2. On-Resistance Variation
with Drain Current and Gate Voltage.
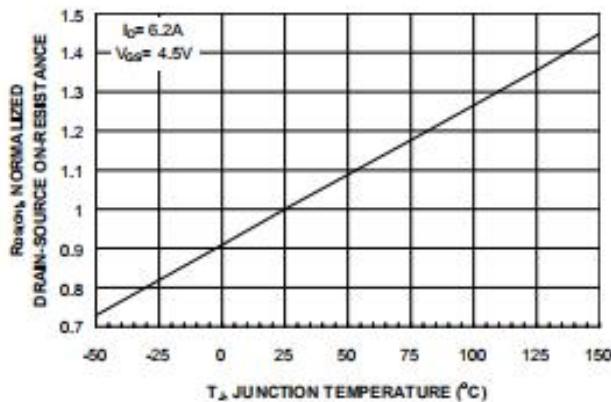
Figure 3. On-Resistance Variation
with Temperature.
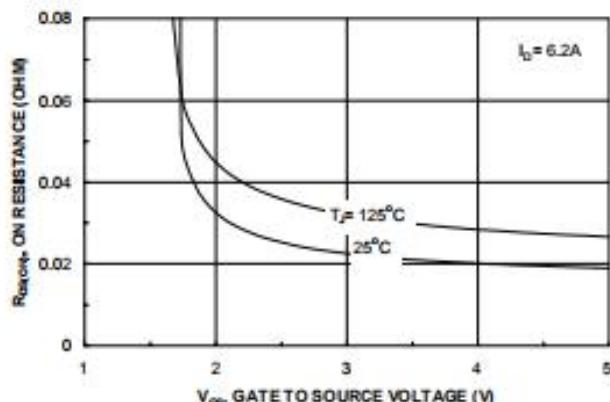
Figure 4. On-Resistance Variation
with Gate-to-Source Voltage.
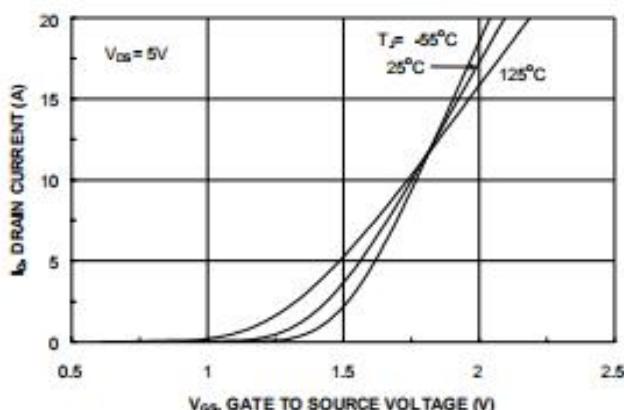
Figure 5. Transfer Characteristics.
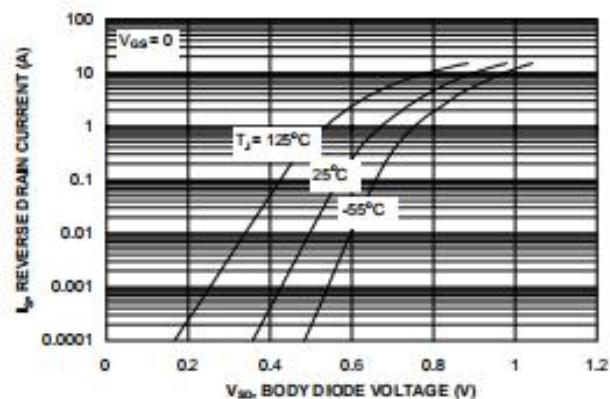
Figure 6. Body Diode Forward Voltage
Variation with Source Current
and Temperature.

## Typical Electrical Thermal Characteristics：
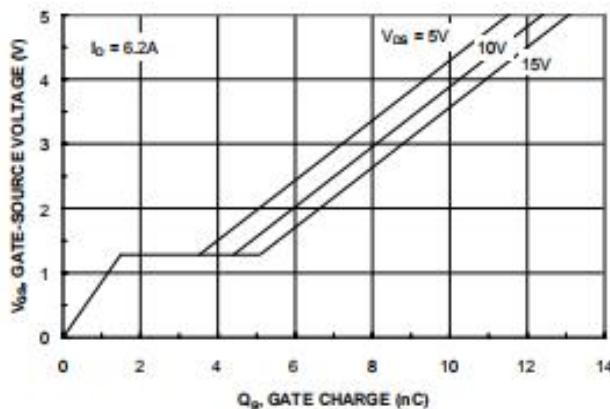

Figure 7. Gate-Charge Characteristics
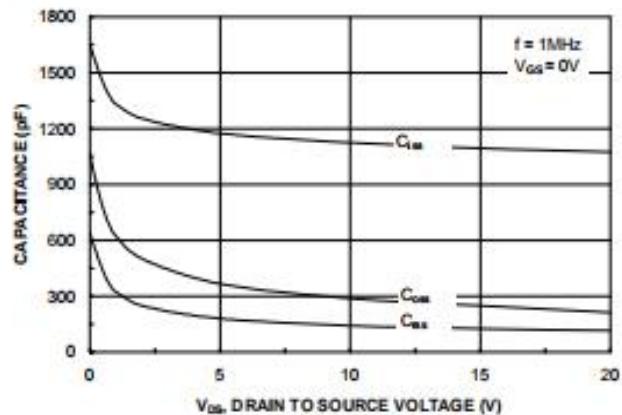
Figure 8. Capacitance Characteristics
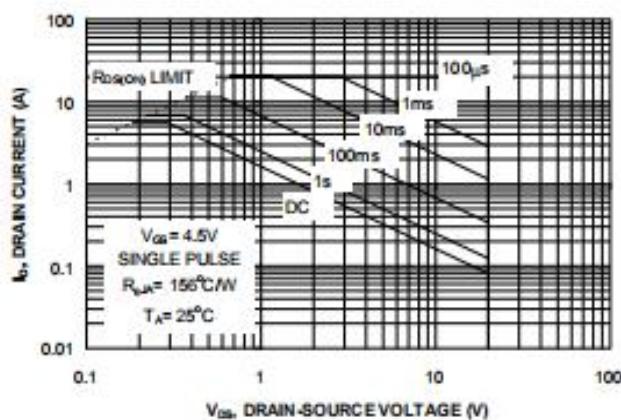
Figure 9. Maximum Safe Operating Area
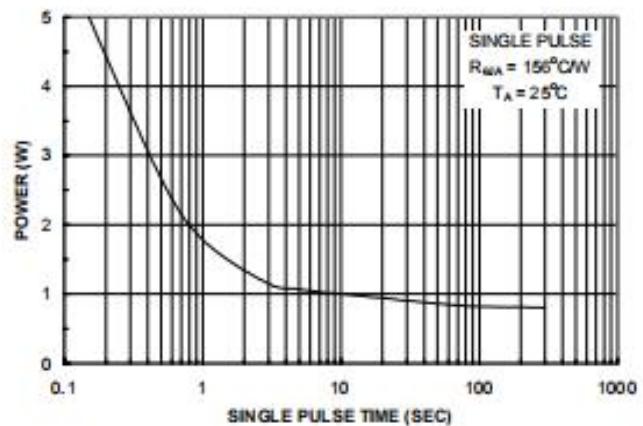


Figure 10. Single Pulse Maximum Power Dissipation
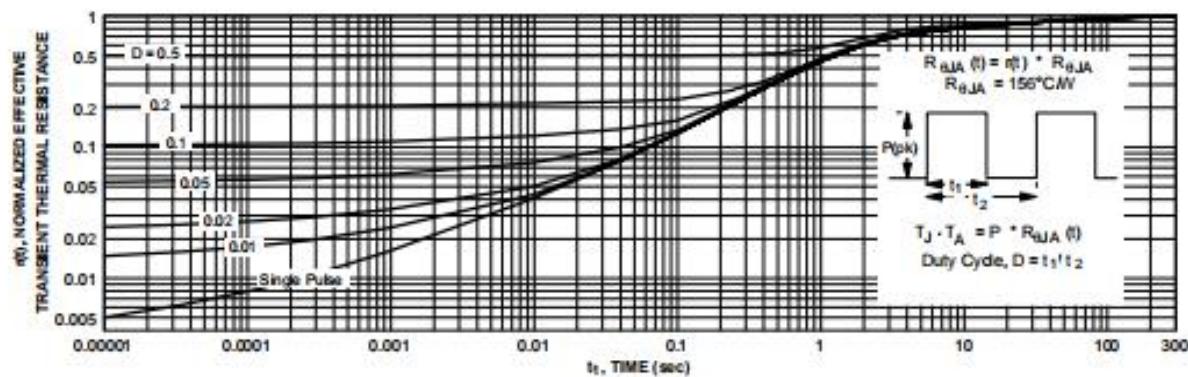
Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in Note 1b.
Transient thermal response will change depending on the circuit board design.