



TSM3460

20V N-Channel MOSFET w/ESD Protected

SOT-26



Pin assignment:

- | | |
|----------|-----------|
| 1. Drain | 6. Drain |
| 2. Drain | 5. Drain |
| 3. Gate | 4. Source |

$V_{DS} = 20V$

$R_{DS(on)}, V_{GS} @ 4.5V, I_{DS} @ 6A = 22m\Omega$ (typ.)

$R_{DS(on)}, V_{GS} @ 2.5V, I_{DS} @ 5A = 30m\Omega$ (typ.)

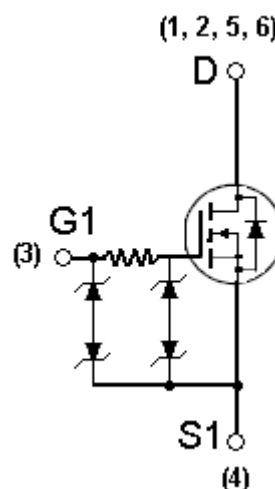
Features

- Advanced trench process technology
- High density cell design for ultra low on-resistance
- Excellent thermal and electrical capabilities
- Specially designed for Li-ion battery packs.
- Battery switch application

Ordering Information

Part No.	Packing	Package
TSM3460CX6	Tape & Reel 3,000/per reel	SOT-26

Block Diagram



Absolute Maximum Rating ($T_a = 25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V _{DS}	20V	V
Gate-Source Voltage		V _{GS}	± 12	V
Continuous Drain Current, V _{GS} @4.5V.	Ta = 25 °C	I _D	6	A
	Ta = 70 °C	I _D	5	A
Pulsed Drain Current, V _{GS} @4.5V		I _{DM}	30	A
Diode Forward Current		I _S	1.5	A
Maximum Power Dissipation	Ta = 25 °C	P _D	1.3	W
	Ta = 70 °C		0.96	
Operating Junction and Storage Temperature Range		T _J , T _{STG}	- 55 to +150	°C

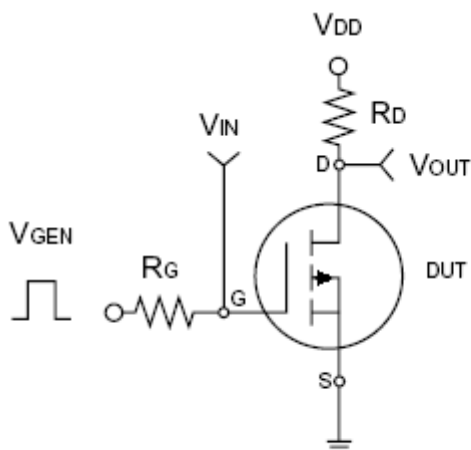
Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Foot (Drain) Thermal Resistance	$R_{\theta jf}$	35	$^\circ C/W$
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta ja}$	120	$^\circ C/W$

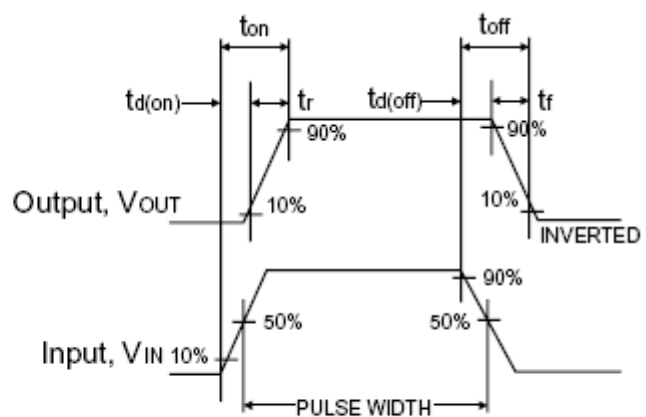
Note: Surface mounted on FR4 board $t \leq 300\mu S$, Duty $< 2\%$.

Electrical Characteristics							
Tj = 25 °C unless otherwise noted							
Parameter	Conditions		Symbol	Min	Typ	Max	Unit
Static							
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA		BV _{DSS}	20	--	--	V
Drain-Source On-State Resistance	V _{GS} = 4.5V, I _D = 6A	25 °C	R _{DS(ON)}	--	22	30	mΩ
	V _{GS} = 4.5V, I _D = 6A	60 °C	R _{DS(ON)}	--	40	50	
Drain-Source On-State Resistance	V _{GS} = 2.5V, I _D = 5A		R _{DS(ON)}	--	30	40	mΩ
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA		V _{GS(TH)}	0.5	0.85	--	V
Zero Gate Voltage Drain Current	V _{DS} = 12V, V _{GS} = 0V		I _{DSS}	--	--	1.0	uA
	V _{DS} = 12V, V _{GS} = 0V, Tj = 60 °C			--	--	25	
Gate Body Leakage	V _{GS} = ± 12V, V _{DS} = 0V		I _{GSS}	--	--	± 100	nA
On-State Drain Current	V _{GS} = 4.5V, V _{DS} >= 5V		I _{D(ON)}	30	--	--	A
Forward Transconductance	V _{DS} = 10V, I _D = 6A		g _{fs}	--	30	--	S
Dynamic *							
Total Gate Charge	V _{DS} = 10V, I _D = 6A, V _{GS} = 4.5V		Q _g	--	15.5	30	nC
Gate-Source Charge			Q _{gs}	--	2	--	
Gate-Drain Charge			Q _{gd}	--	3.5	--	
Turn-On Delay Time	V _{DD} = 10V, R _L = 10Ω, I _D = 1A, V _{GEN} = 4.5V, R _G = 6Ω		t _{d(on)}	--	75	100	nS
Turn-On Rise Time			t _r	--	125	150	
Turn-Off Delay Time			t _{d(off)}	--	600	720	
Turn-Off Fall Time			t _f	--	300	360	
Input Capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz		C _{iss}	--	1336	--	pF
Output Capacitance			C _{oss}	--	220	--	
Reverse Transfer Capacitance			C _{rss}	--	130	--	
Source-Drain Diode							
Max. Diode Forward Current			I _S	--	--	1.5	A
Diode Forward Voltage	I _S = 1.5A, V _{GS} = 0V		V _{SD}	--	0.6	1.2	V

Note : * for design only, not subject to production tested.
pulse test: pulse width $\leq 300\mu S$, duty cycle $\leq 2\%$

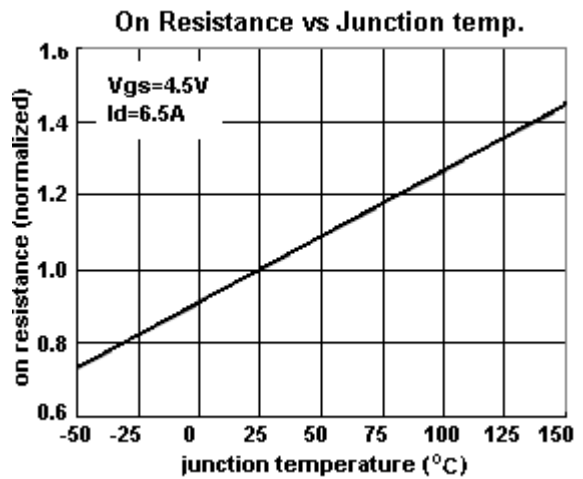
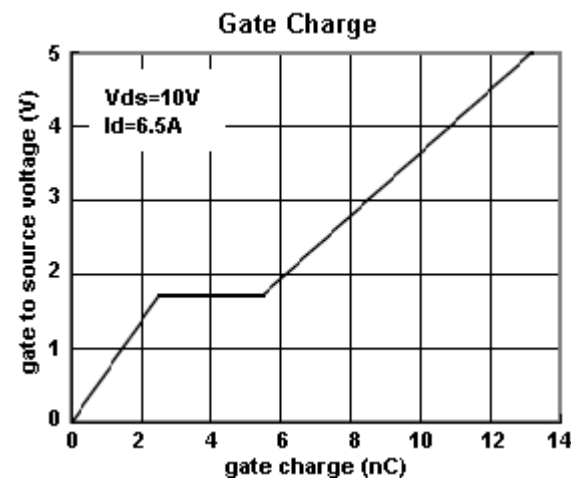
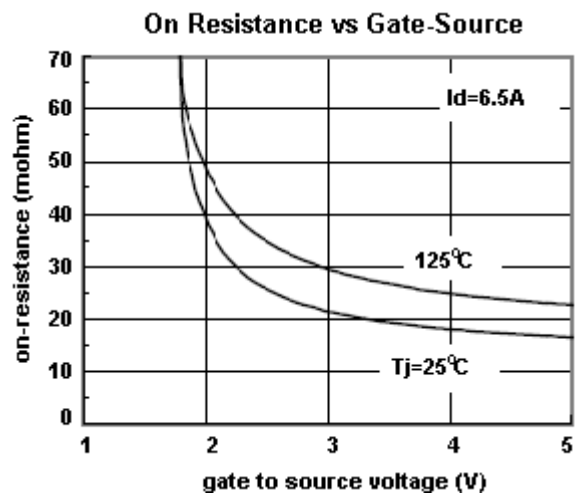
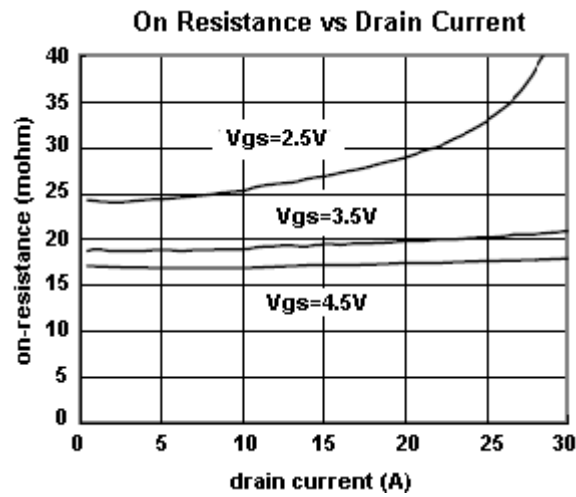
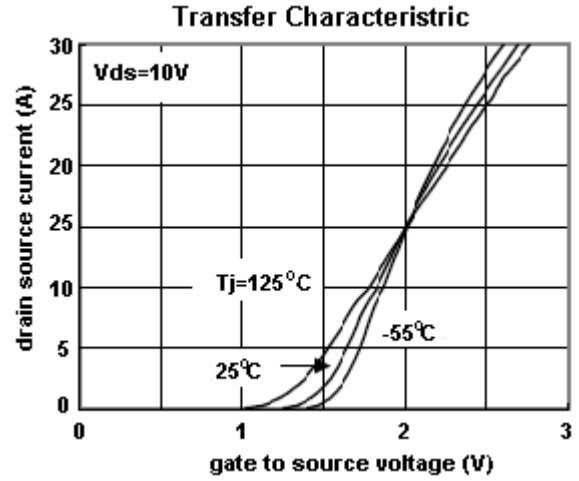
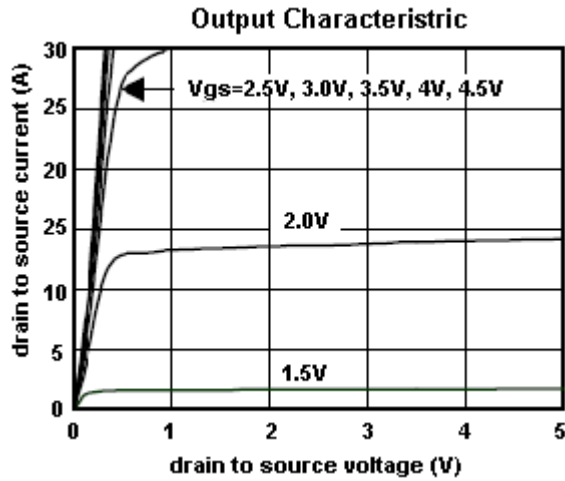


Switching Test Circuit

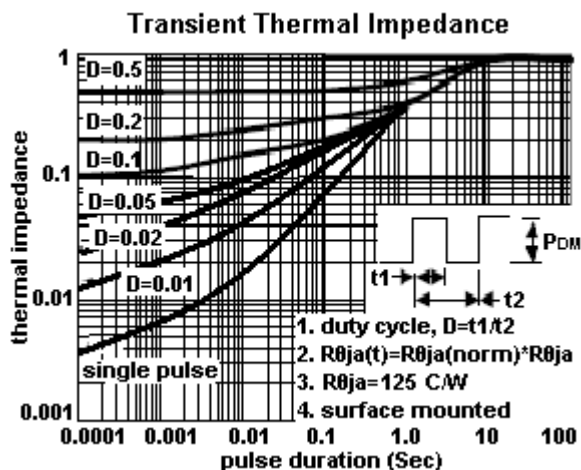
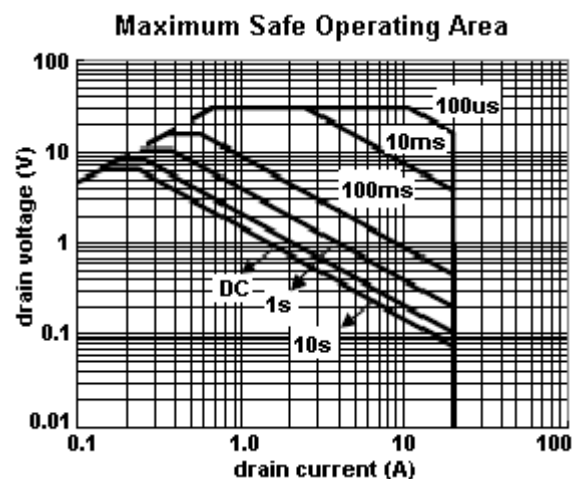
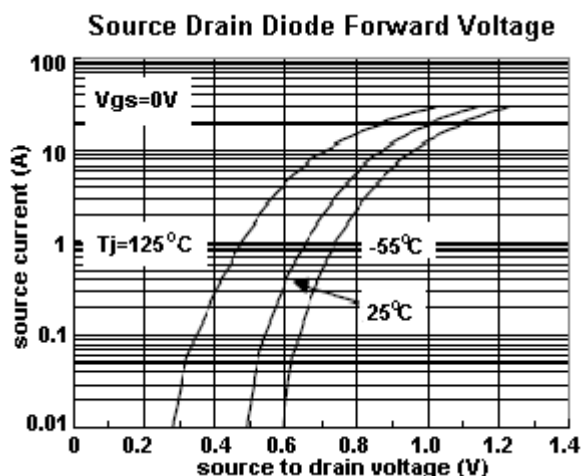
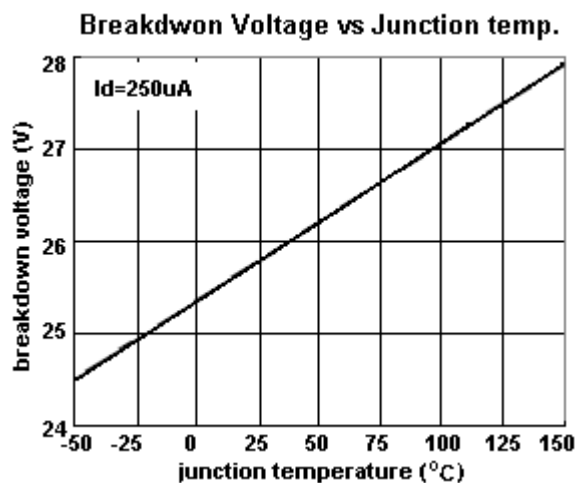
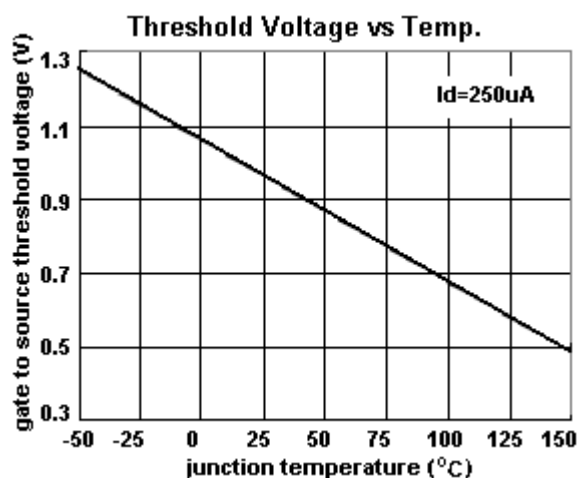


Switchin Waveforms

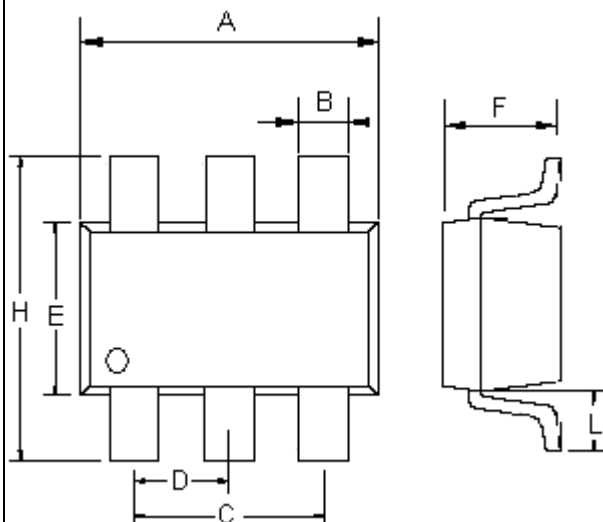
Typical Characteristics Curve ($T_a = 25^\circ\text{C}$ unless otherwise noted)



Electrical Characteristics Curve (continued)



SOT-26 Mechanical Drawing



SOT-26 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.00	0.106	0.118
B	0.25	0.50	0.010	0.020
C	1.90(typ)		0.075(typ)	
D	0.95(typ)		0.037(typ)	
E	1.50	1.70	0.059	0.067
F	1.05	1.35	0.041	0.053
H	2.60	3.00	0.102	0.118
L	0.60(typ)		0.024(typ)	

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