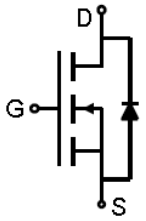
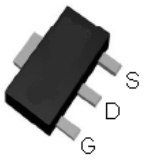
N-Channel Enhancement Mode MOSFET TDM3424

DESCRIPTION

The TDM3424 uses advanced trench technology to provide excellent RDS(ON) and low gate charge .This device is suitable for use as a load switch or in PWM applications.



Schematic diagram



Top View SOT-89

GENERAL FEATURES

- RDS(ON) < 32mΩ @ VGS=4.5V
  RDS(ON) < 23mΩ @ VGS=10V
- High Power and current handling capability
- Lead free product is available
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management

ABSOLUTE MAXIMUM RATINGS(T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current @ Continuous(Note 1)	I_D（25℃）	8	A
	I_D（70℃）	6	A
Drain Current @ Current-Pulsed (Note 1)	I_{DM}	20	A
Maximum Power Dissipation (T_A=25℃)	P_D	3.5	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	35	℃/W

ELECTRICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

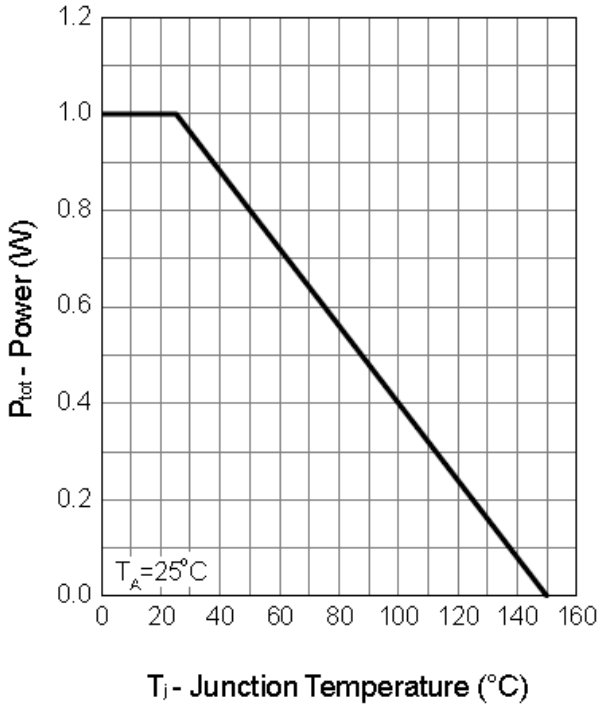
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250μA	1	1.9	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5A		26	32	mΩ
		V_{GS}=10V, I_D=8A		20	23	mΩ
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz		410		PF
Output Capacitance	C_{oss}			70		PF
Reverse Transfer Capacitance	C_{rss}			40		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=15V,V_{GS}=10V,R_{GEN}=6Ω ID=1A		8		nS
Turn-on Rise Time	t_r			9		nS
Turn-Off Delay Time	$t_{d(off)}$			14		nS
Turn-Off Fall Time	t_f			4		nS
Total Gate Charge	Q_g	V_{DS}=15V,I_D=8A,V_{GS}=4.5V		3.8		nC
Gate-Source Charge	Q_{gs}			1.3		nC
Gate-Drain Charge	Q_{gd}			1.6		nC
Body Diode Reverse Recovery Time	T_{rr}	I_F=8A, dI/dt=100A/μs		12.8		nS
Body Diode Reverse Recovery Charge	Q_{rr}			3.8		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1A		0.8	1.1	V

NOTES:

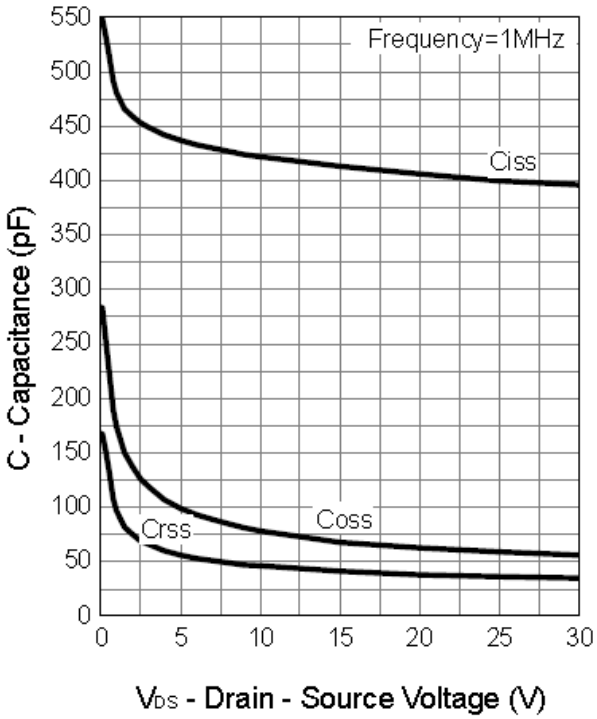
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 1in2 FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing

Typical Operating Characteristics

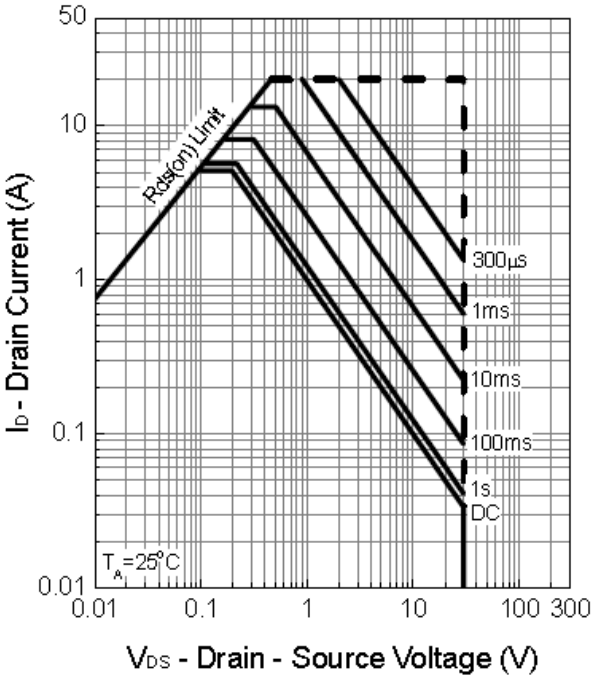
Power Dissipation



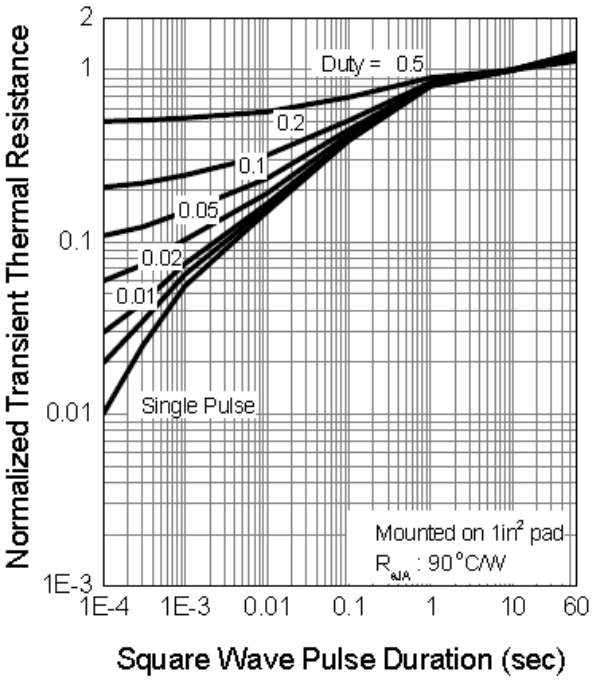
Capacitance



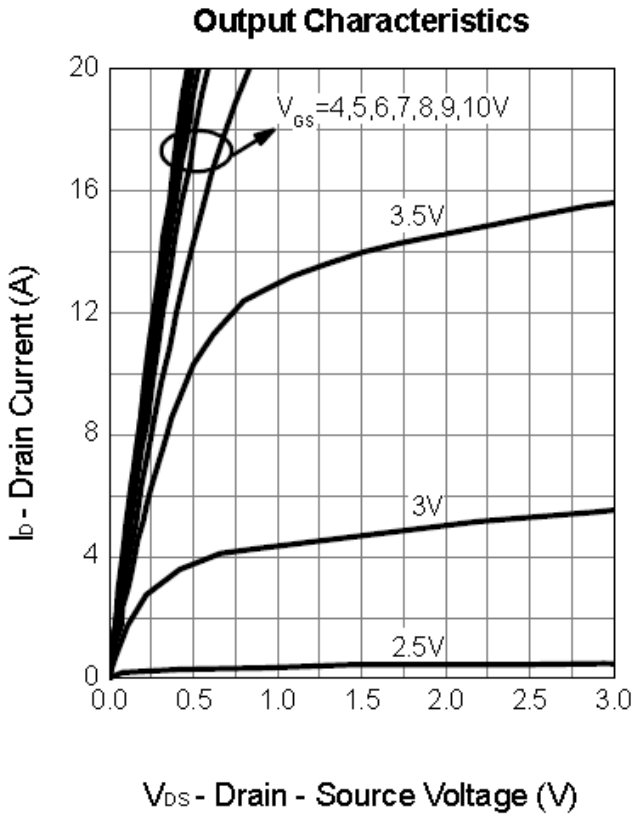
Safe Operation Area

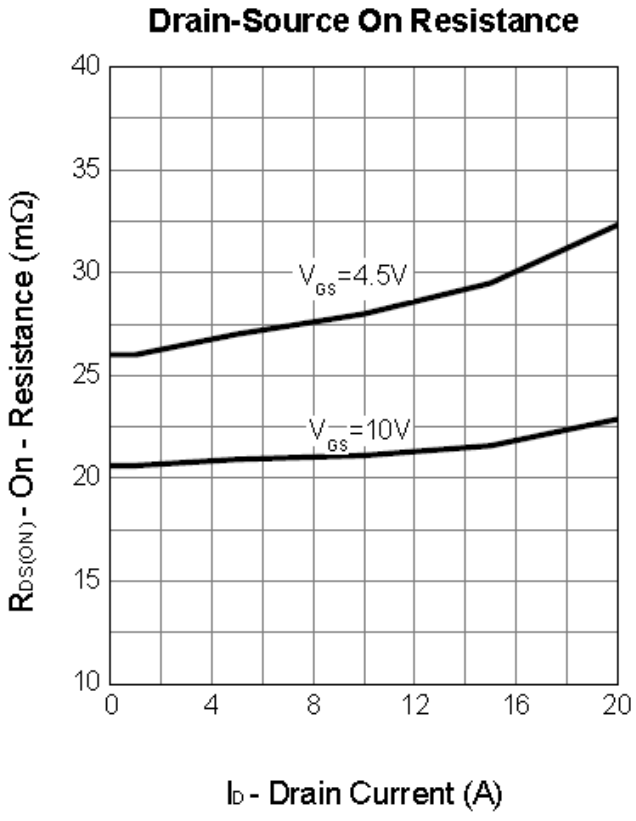


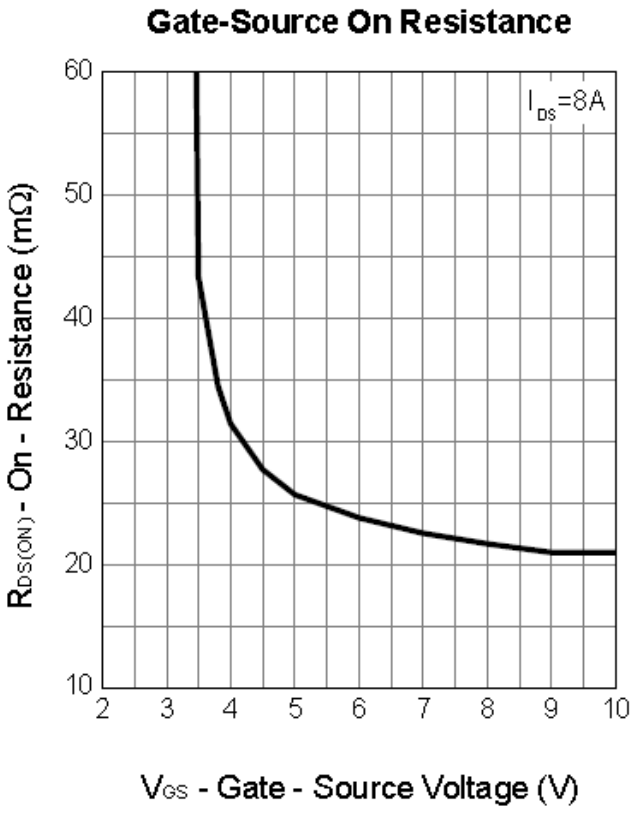
Thermal Transient Impedance

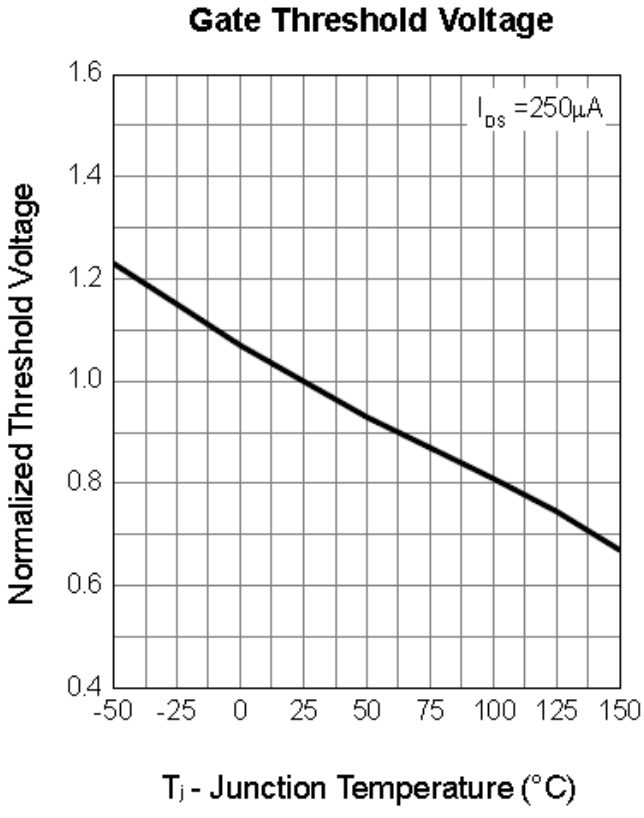


Typical Operating Characteristics(Cont.)

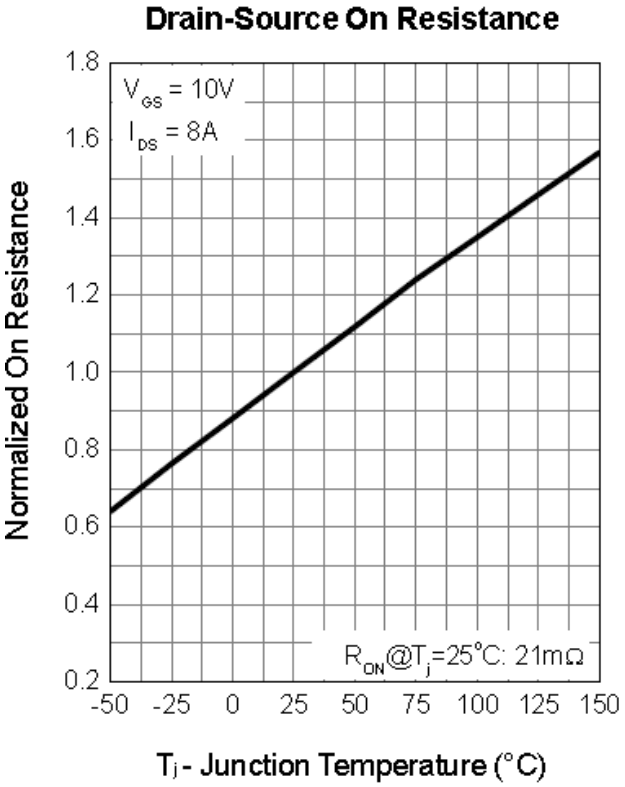


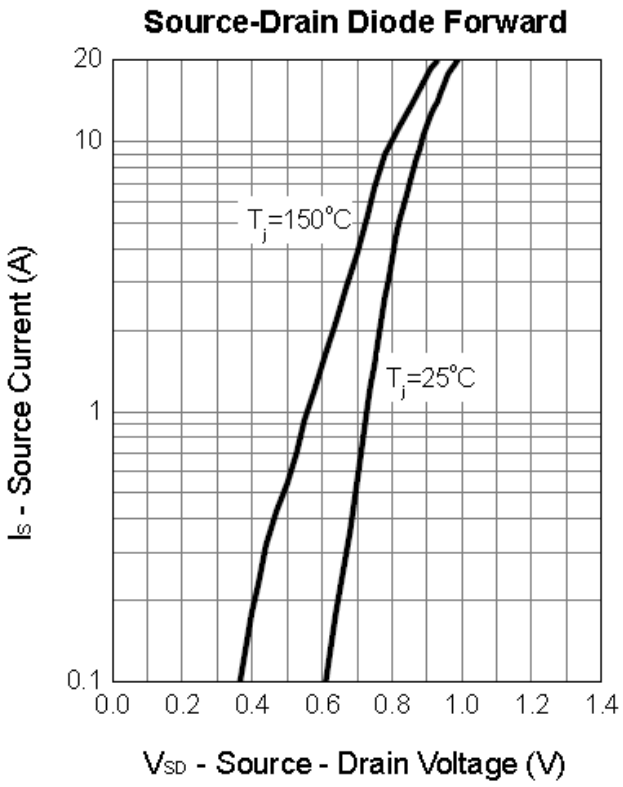


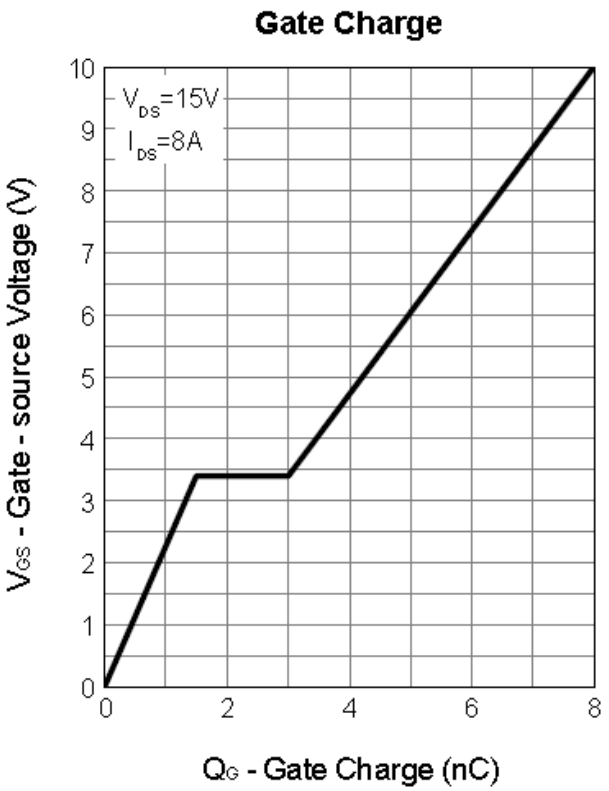




Typical Operating Characteristics (Cont.)

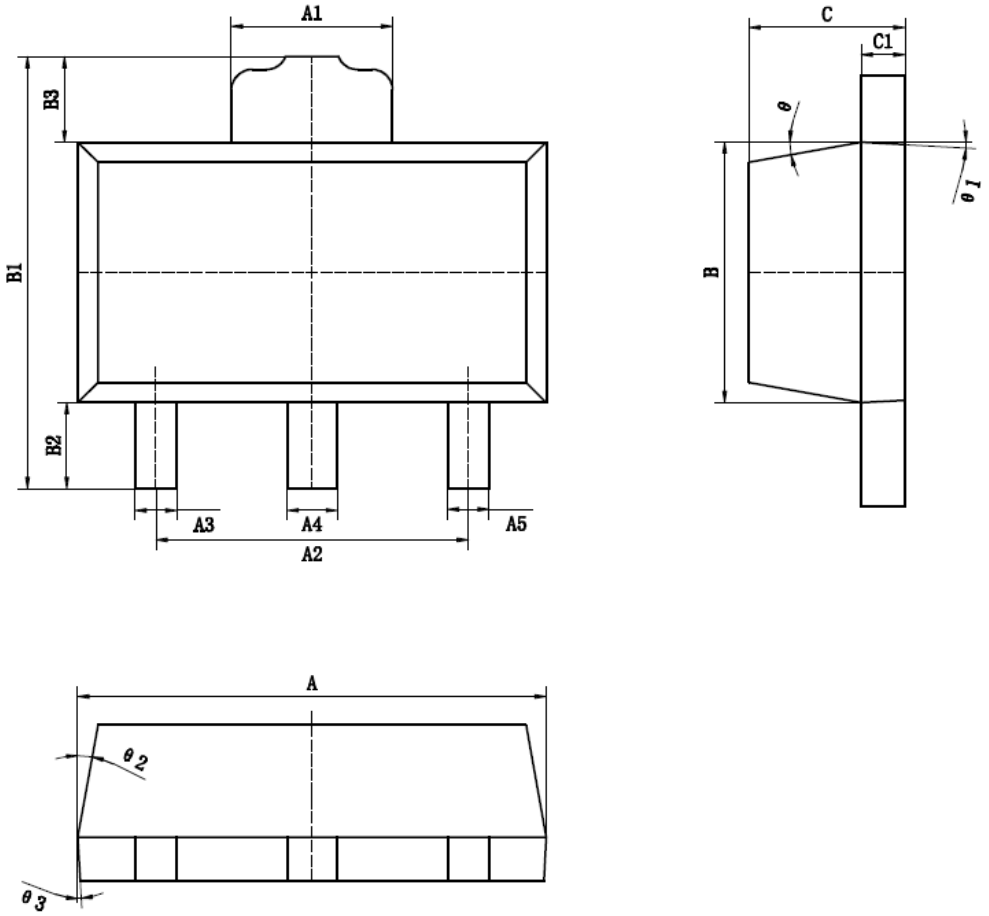






Package Information

SOT89-3 Package



尺寸 / 标注	最小(mm)	最大(mm)	尺寸 / 标注	最小(mm)	最大(mm)
A	4.40	4.60	B3	0.82	0.83
A1	1.65	1.75	C	1.40	1.60
A2	2.95	3.05	C1	0.35	0.45
A3	0.35	0.45	θ	6° TYP4	
A4	0.43	0.53	θ1	3° TYP4	
A5	0.35	0.45	θ2	6° TYP4	
B	2.40	2.60	θ3	3° TYP4	
B1	4.05	4.25			
B2	0.82	0.83			

Design Notes