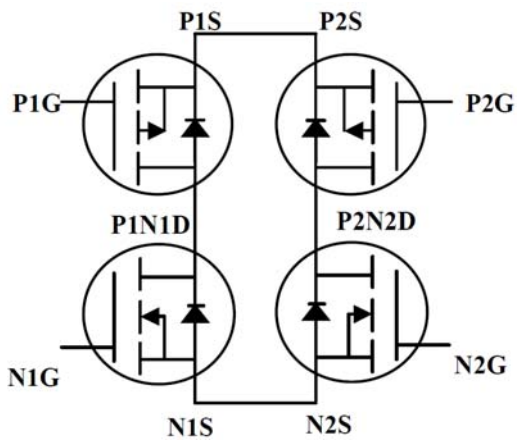
2N AND 2P-CHANNEL Enhancement Mode MOSFET TDM3411

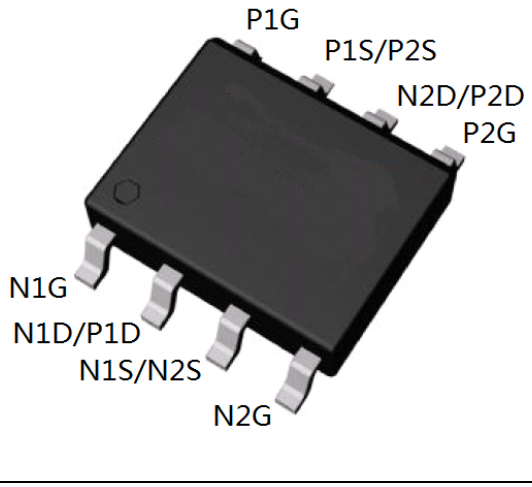
DESCRIPTION

The TDM3411 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.



GENERAL FEATURES

- N CHANNEL
  RDS(ON) < 35mΩ @ VGS=4.5V
  RDS(ON) < 31mΩ @ VGS=10V
- P CHANNEL
  RDS(ON) < 43mΩ @ VGS=-4.5V
  RDS(ON) < 33mΩ @ VGS=-10V
- High Power and current handling capability
- Lead free product is available
- SOP-8 Package



Application

- PWM applications
- Load switch
- Power management
- Hard Switched and High Frequency Circuits

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

Parameter	Symbol	Limit		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Drain Current @ Continuous	I_D（T_A=25℃）	6	-4.5	A
	I_D（T_A=70℃）	4.8	-3.6	A
Drain Current @ Current-Pulsed (Note 1)	I_{DM}	22.5	22.5	A
Maximum Power Dissipation (T_A=25℃)	P_D	2.0		W
Maximum Operating Junction Temperature	T_J	150		℃
Storage Temperature Range	T_{STG}	-55 To 150		℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 1)	$R_{\theta JA}$	90	℃/W

N-CH 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 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250μA	1.3	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5A		31	35	mΩ
		V_{GS}=10V, I_D=8A		25	31	mΩ
DYNAMIC CHARACTERISTICS (Note3)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	300	410	550	PF
Output Capacitance	C_{oss}		40	70	100	PF
Reverse Transfer Capacitance	C_{rss}		30	40	60	PF
SWITCHING CHARACTERISTICS (Note 3)						
Total Gate Charge	Q_g	V_{DS}=15V,I_D=8A,V_{GS}=4.5V	-	3.8	5.5	nC
Gate-Source Charge	Q_{gs}		-	1.3	-	nC
Gate-Drain Charge	Q_{gd}		-	1.6	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 2)	V_{SD}	V_{GS}=0V,I_S=5A		0.8	1.3	V

NOTES:

1. Pulse width limited by max. junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing

P-CH 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 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250μA	-1.3	-1.8	-2.3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4A		39	43	mΩ
		V_{GS}=-10V, I_D=9.3A		29	33	mΩ
DYNAMIC CHARACTERISTICS (Note3)						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	840	-	PF
Output Capacitance	C_{oss}		-	150	-	PF
Reverse Transfer Capacitance	C_{rss}		-	110	-	PF
SWITCHING CHARACTERISTICS (Note 3)						
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-9.3A,V_{GS}=-10V	-	18	-	nC
Gate-Source Charge	Q_{gs}		-	3	-	nC
Gate-Drain Charge	Q_{gd}		-	4	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 2)	V_{SD}	V_{GS}=0V,I_S=-2A		-0.8	-1.1	V

NOTES:

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2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
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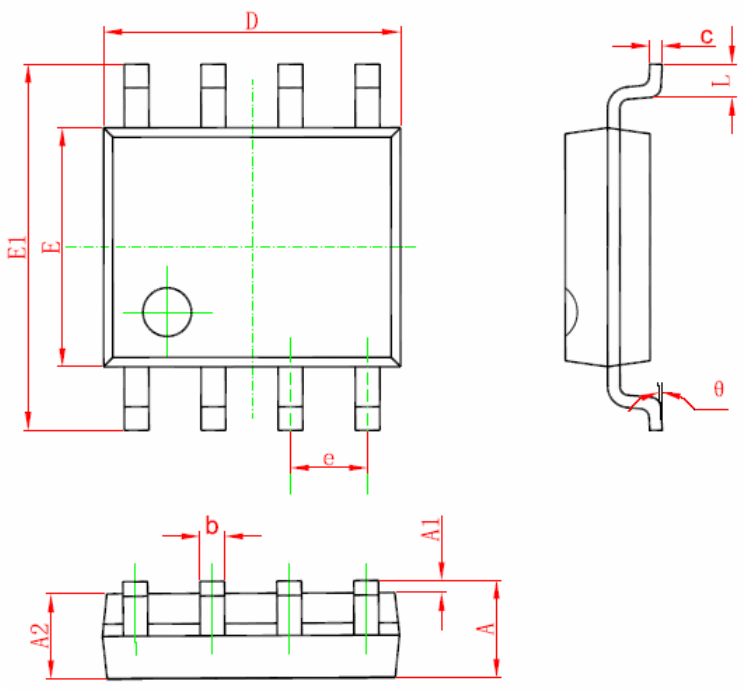
Package Information

SOP-8 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Design Notes