

N-Channel Enhancement Mode MOSFET

TDM3426

**DESCRIPTION**

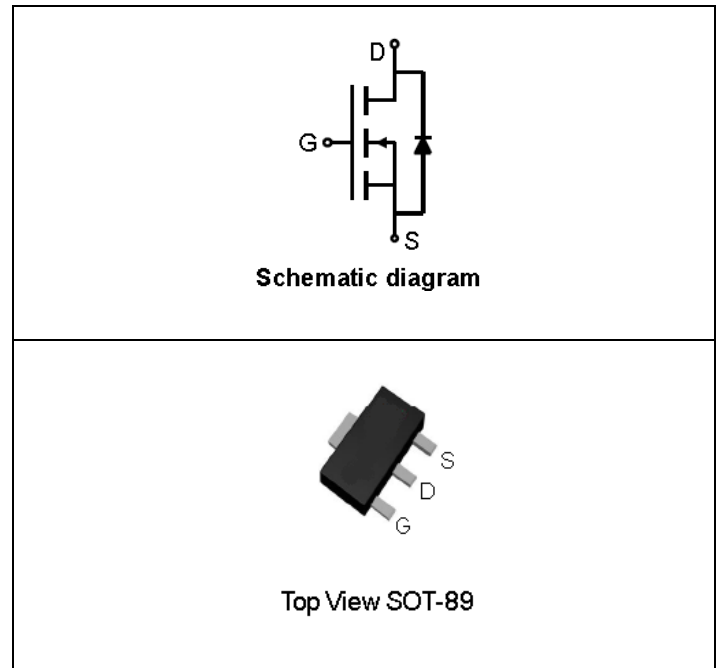
The TDM3426 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

**GENERAL FEATURES**

- RDS(ON) < 10.8mΩ @ VGS=4.5V  
RDS(ON) < 9.2mΩ @ 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(TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current @ Continuous(Note 2)	I <sub>D</sub> ( 25°C )	15	A
	I <sub>D</sub> ( 100°C )	12	A
Drain Current @ Current-Pulsed (Note 1)	I <sub>DM</sub>	60	A
Maximum Power Dissipation (TA=25°C)	P <sub>D</sub>	3.5	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55 To 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	RθJA	35	°C/W
---	------	----	------

**N-Channel Enhancement Mode MOSFET**
**TDM3426**
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

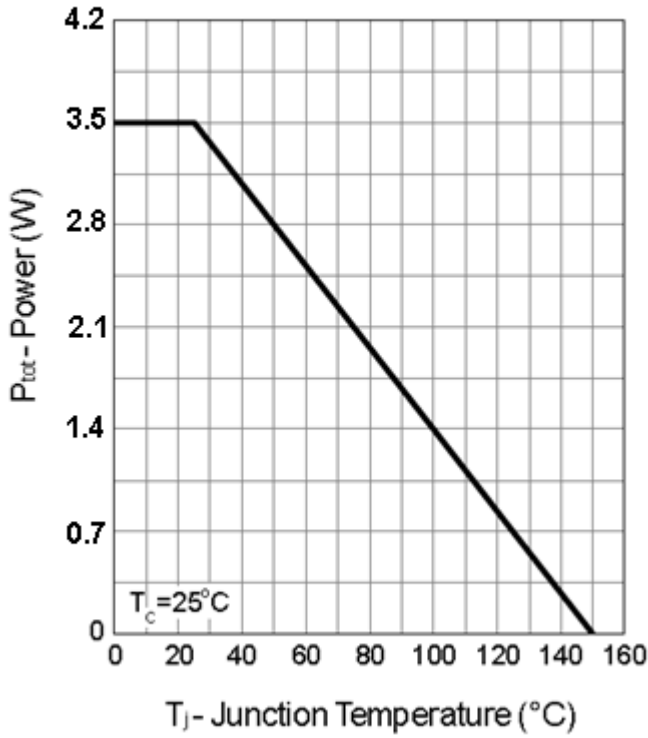
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b> (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=15A$		9.6	10.8	m $\Omega$
		$V_{GS}=10V, I_D=30A$		7.9	9.2	m $\Omega$
<b>DYNAMIC CHARACTERISTICS</b> (Note 4)						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, F=1.0MHz$	980	1180	1400	PF
Output Capacitance	$C_{oss}$		158	190	228	PF
Reverse Transfer Capacitance	$C_{rss}$		90	115	140	PF
<b>SWITCHING CHARACTERISTICS</b> (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=15\Omega, V_{GS}=10V, R_{GEN}=6\Omega$ $I_D=1A$		11	20	nS
Turn-on Rise Time	$t_r$			12	22	nS
Turn-Off Delay Time	$t_{d(off)}$			36	60	nS
Turn-Off Fall Time	$t_f$			10	19	nS
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=30A, V_{GS}=10V$		20	24	nC
Gate-Source Charge	$Q_{gs}$			2.2	2.7	nC
Gate-Drain Charge	$Q_{gd}$			3.5	4.1	nC
Body Diode Reverse Recovery Time	$T_{rr}$	$I_F=5A, di/dt=100A/\mu s$		20		nS
Body Diode Reverse Recovery Charge	$Q_{rr}$			10		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=15A$		0.85	1.1	V

**NOTES:**

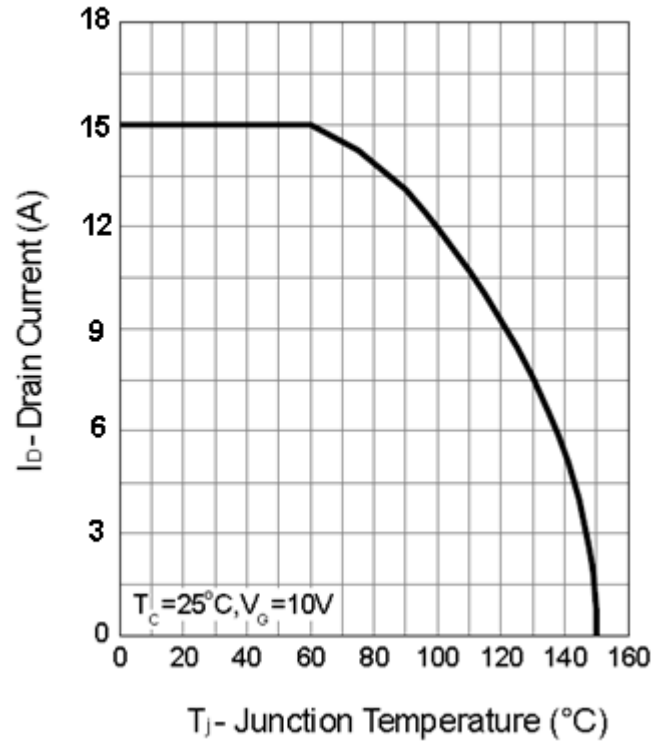
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 1in2 FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing

Typical Operating Characteristics

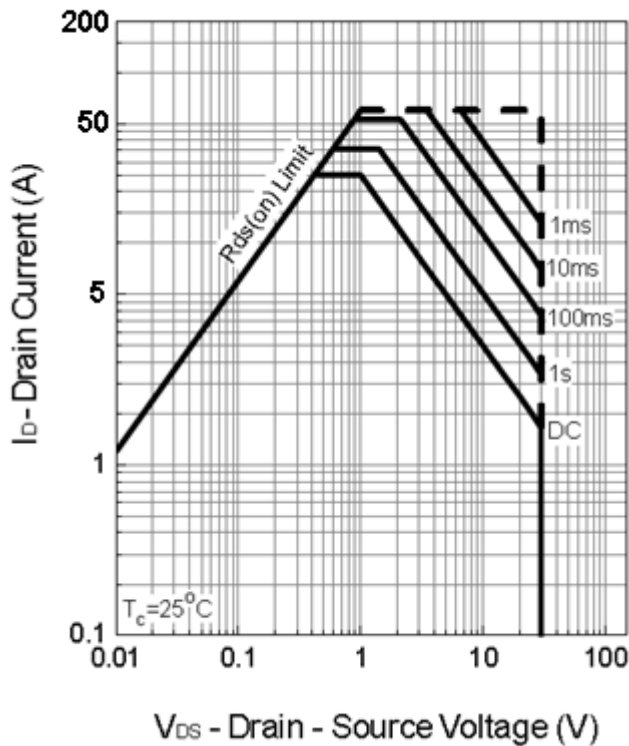
Power Dissipation



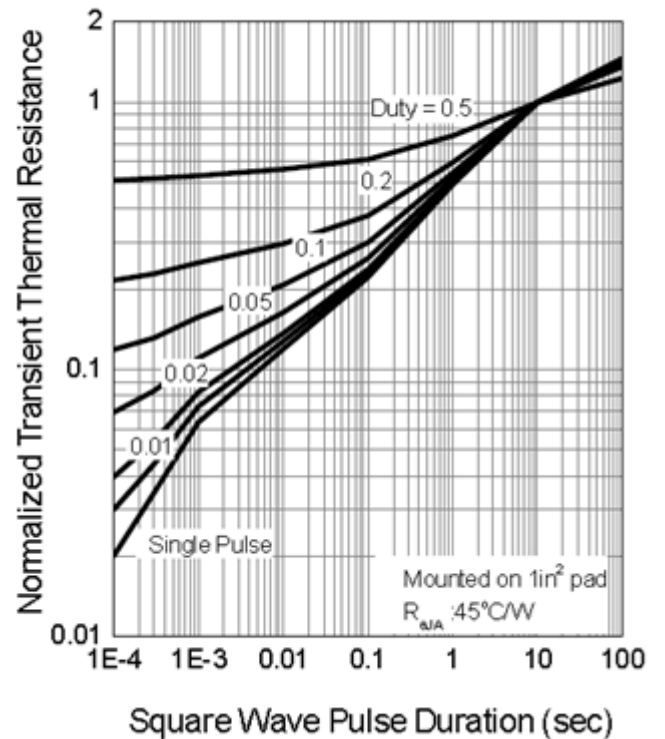
Drain Current



Safe Operation Area

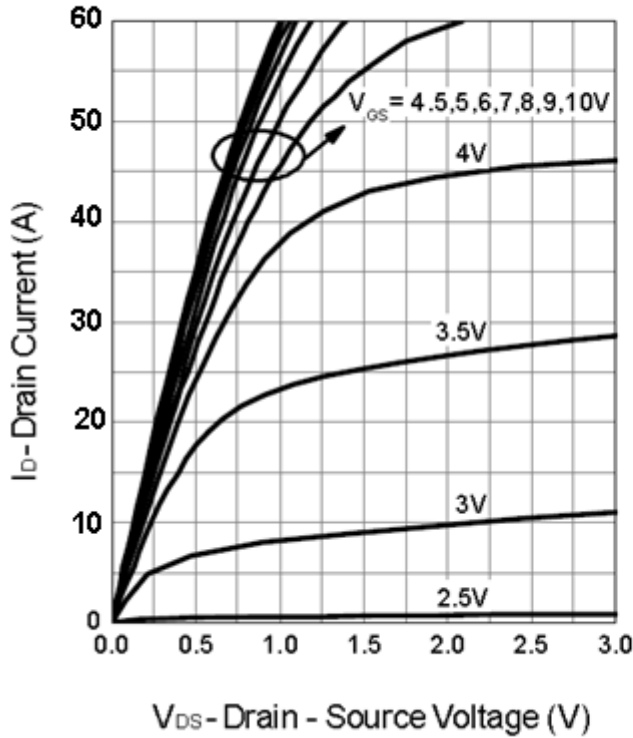


Thermal Transient Impedance

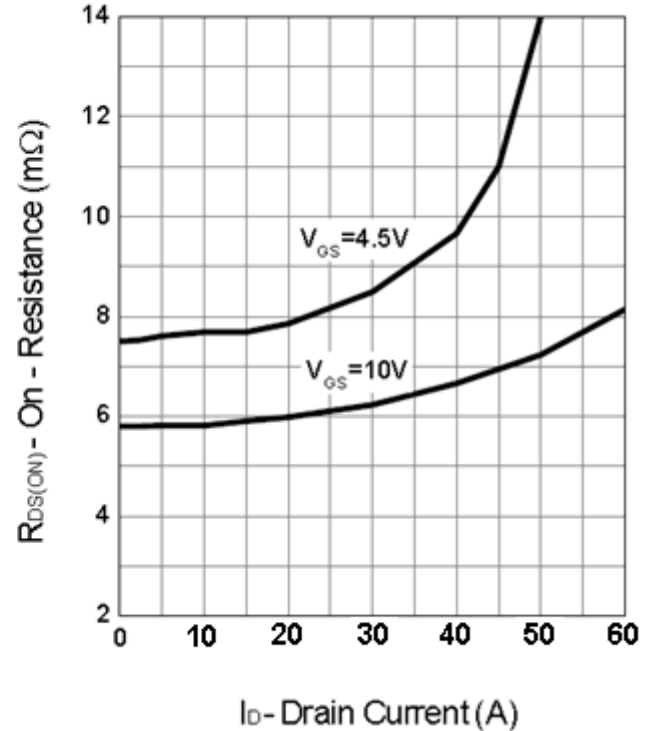


Typical Operating Characteristics(Cont.)

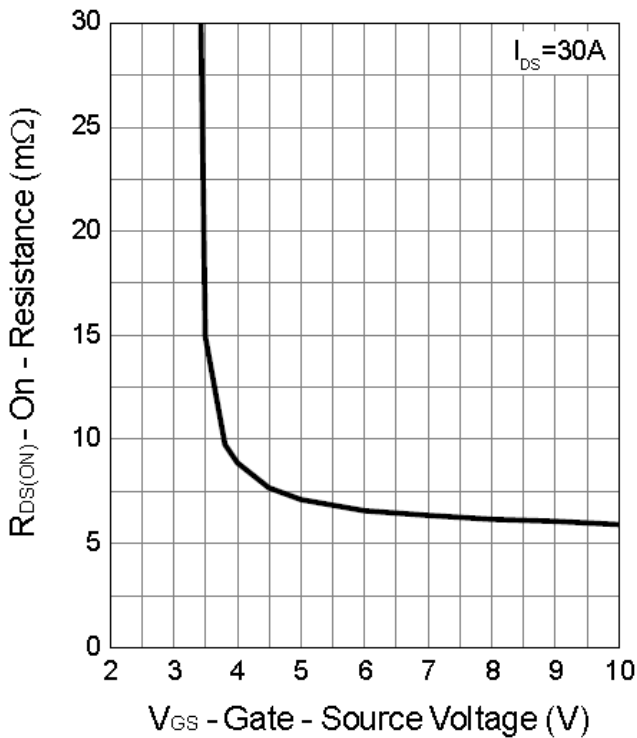
Output Characteristics



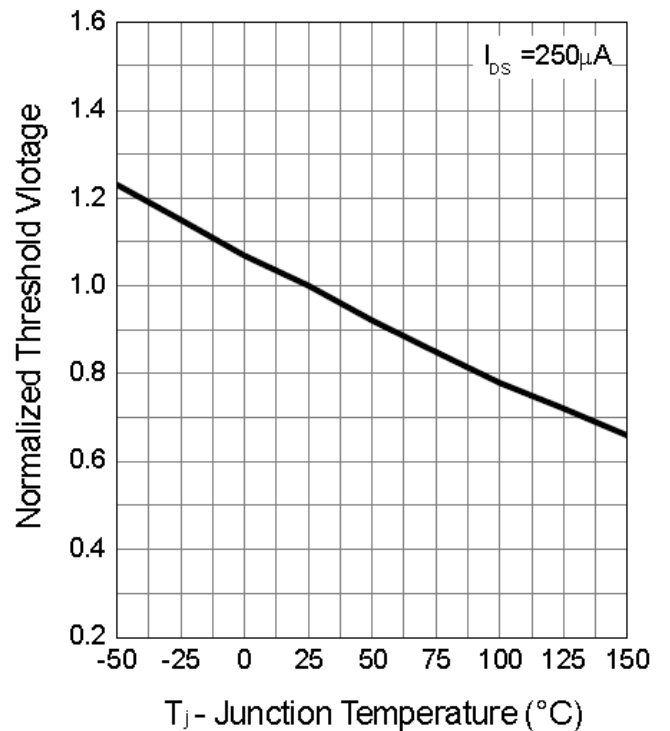
Drain-Source On Resistance



Gate-Source On Resistance

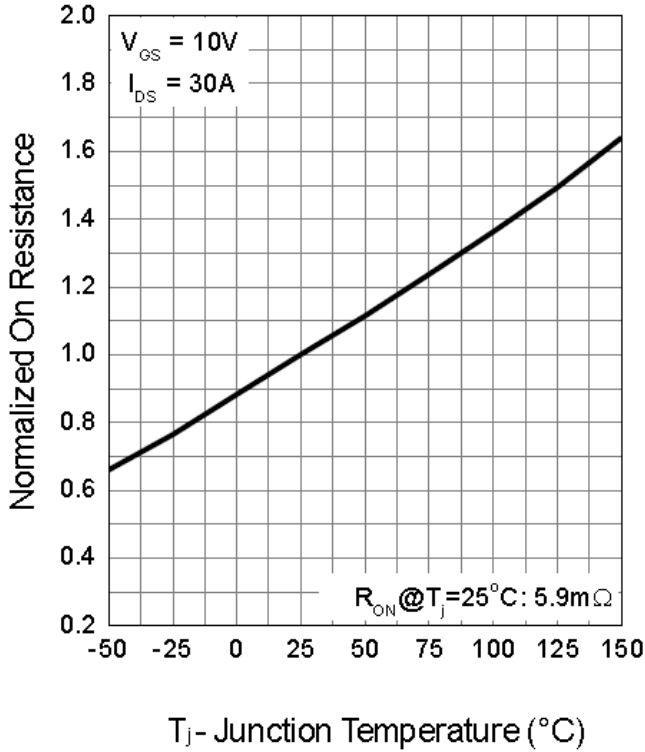


Gate Threshold Voltage

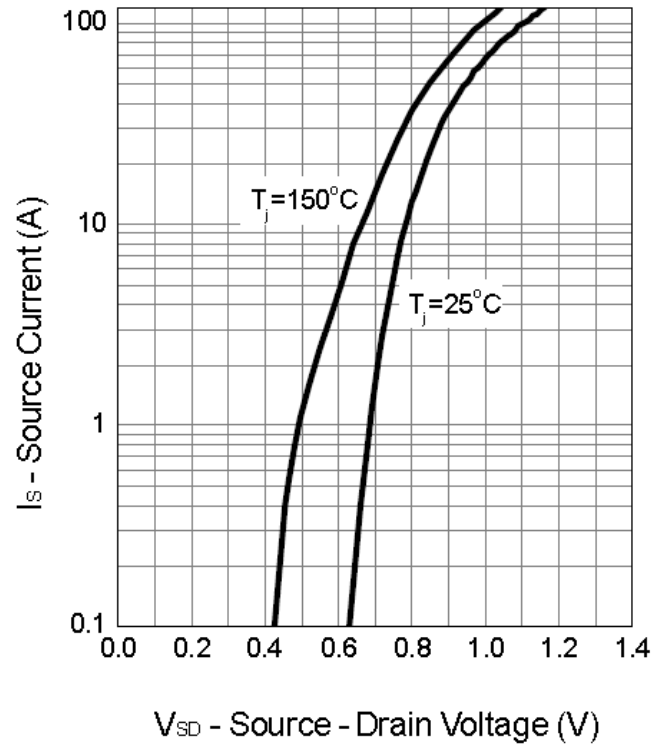


Typical Operating Characteristics (Cont.)

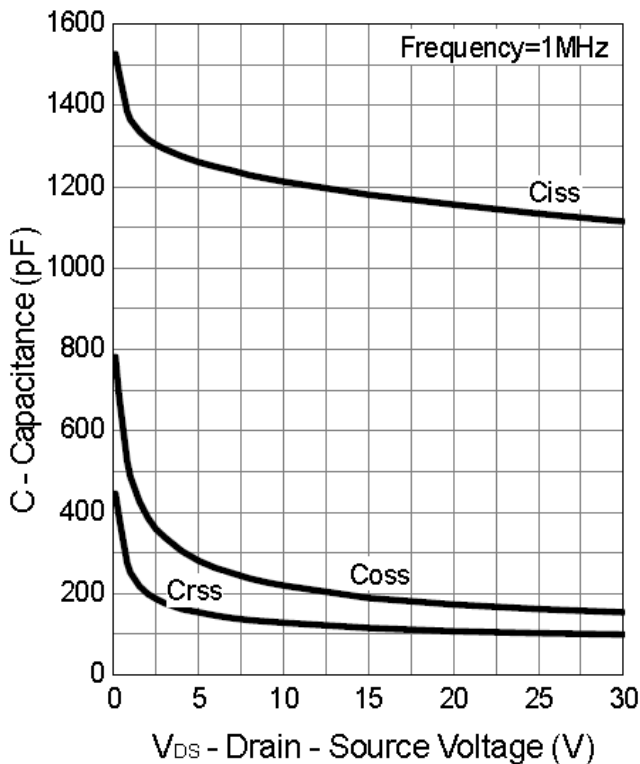
Drain-Source On Resistance



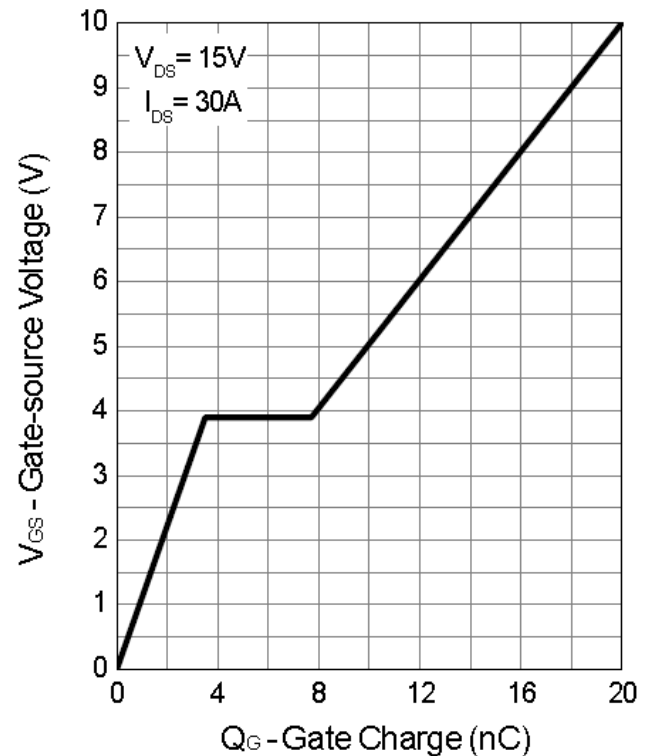
Source-Drain Diode Forward



Capacitance

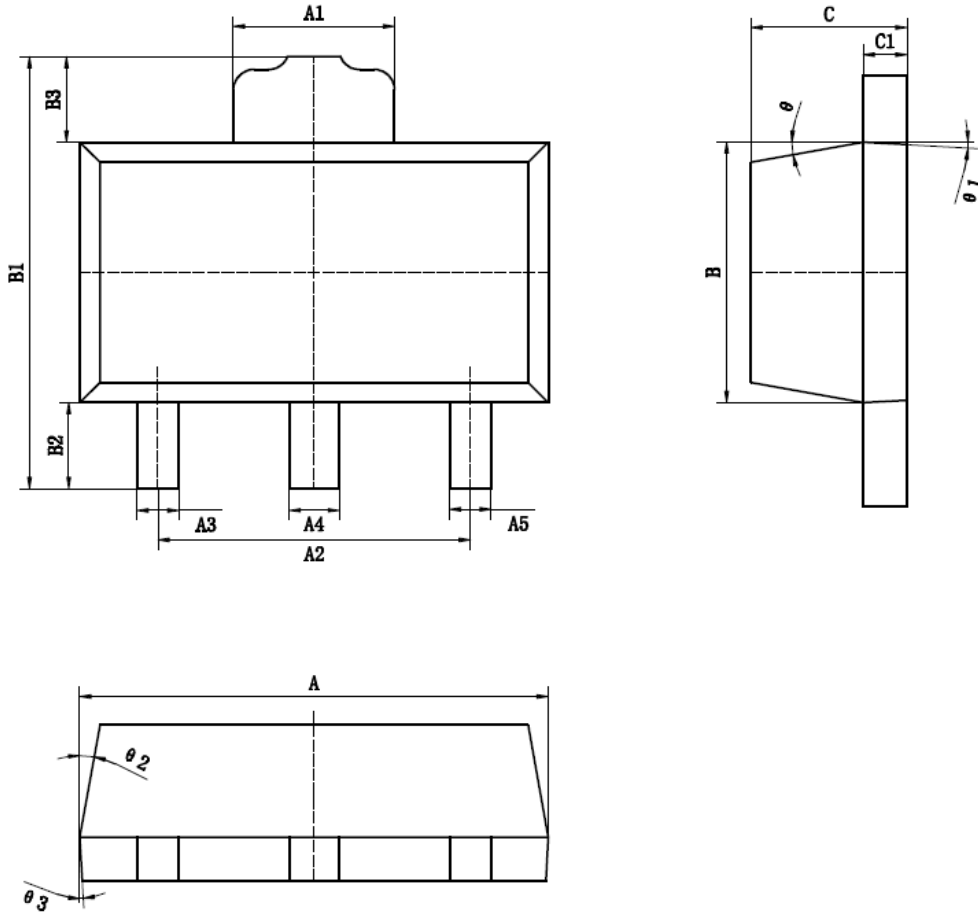


Gate Charge



Package Information

SOT89-3 Package



标注	尺寸	最小(mm)	最大(mm)	标注	尺寸	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	$\theta$		6° TYP4	
A4		0.43	0.53	$\theta 1$		3° TYP4	
A5		0.35	0.45	$\theta 2$		6° TYP4	
B		2.40	2.60	$\theta 3$		3° TYP4	
B1		4.05	4.25				
B2		0.82	0.83				

Design Notes