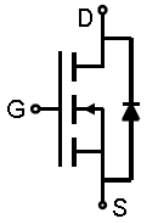
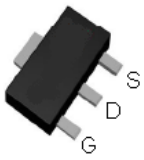
N-Channel Enhancement Mode MOSFET TDM3426B

DESCRIPTION

The TDM3426B 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) < 16mΩ @ VGS=4.5V
  RDS(ON) < 10mΩ @ 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
Diode Continuous Forward Current	Is(T_C=25℃)	5	A
Continuous Drain Current (Note 1)	I_D（T_C=25℃）	18	A
Pulse Drain Current Tested	I_{DM}（T_A=25℃）	36	A
Maximum Power Dissipation	P_D(T_C=25℃)	20	W
Maximum Power Dissipation	P_D（T_A=25℃）	3.5	W
	P_D（T_A=70℃）	2.2	W
Thermal Resistance,Junction-to-Ambient(t<10s)	$R_{\theta JA}$	35	℃/W
Maximum Operating Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 To 150	℃

NOTES:

1. Max continuous current is limited by bonding wire.

ELECTRICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

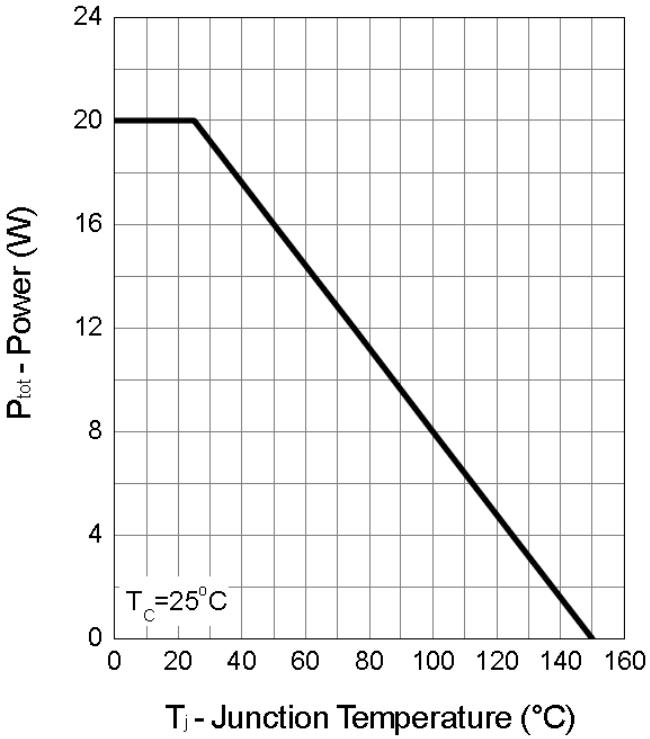
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±10	μA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250μA	1.4	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A	-	8.2	10	mΩ
		V_{GS}=4.5V, I_D=8A	-	12.3	16	mΩ
DYNAMIC CHARACTERISTICS (Note3)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	450	600	PF
Output Capacitance	C_{oss}		-	318	-	PF
Reverse Transfer Capacitance	C_{rss}		-	22	-	PF
SWITCHING CHARACTERISTICS (Note 3)						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=15V, R_L=15 Ω, V_{GEN}=10V,	-	8.5	16	nS
Turn-on Rise Time	t_r	R_G=6 Ω I_D=1A	-	10	18	nS
Turn-Off Delay Time	$t_{d(off)}$		-	14	26	nS
Turn-Off Fall Time	t_f		-	10.6	19	nS
Total Gate Charge	Q_g	V_{DS}=15V,I_D=10A,V_{GS}=10V	-	8	12	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	nC
Gate-Drain Charge	Q_{gd}		-	1.2	-	nC
Body Diode Reverse Recovery Time	T_{rr}	I_{DS}=10A, dI/dt=100A/μs	-	20.5	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	7.2	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 2)	V_{SD}	V_{GS}=0V,I_S=5A	-	0.8	1.1	V

NOTES:

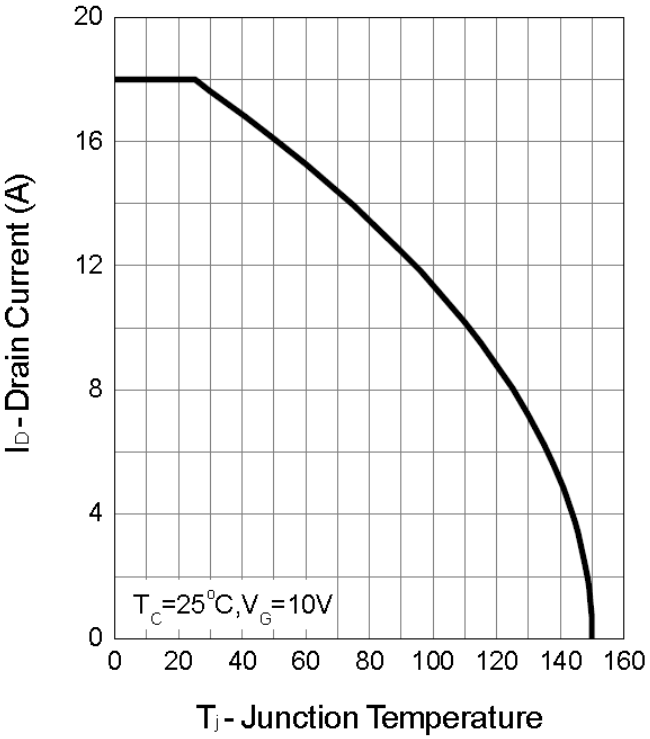
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing

Typical Operating Characteristics

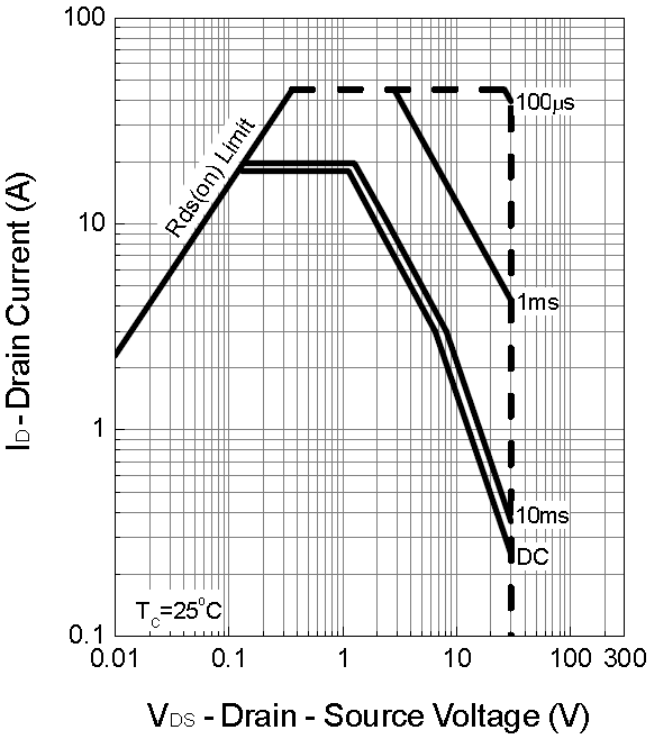
Power Dissipation



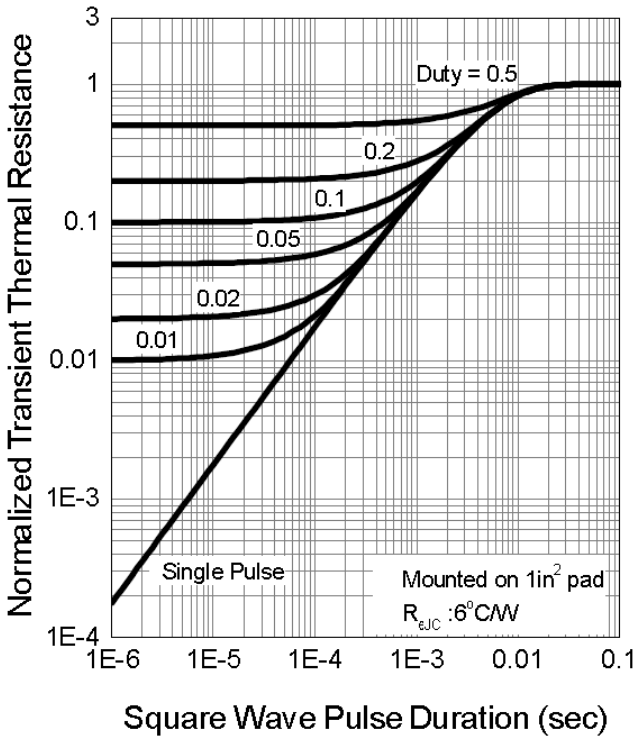
Drain Current



Safe Operation Area

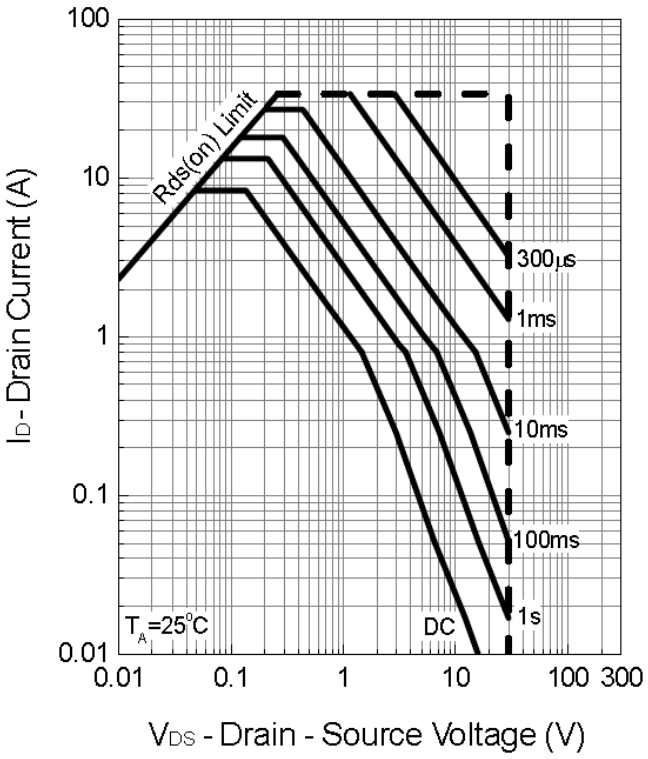


Thermal Transient Impedance

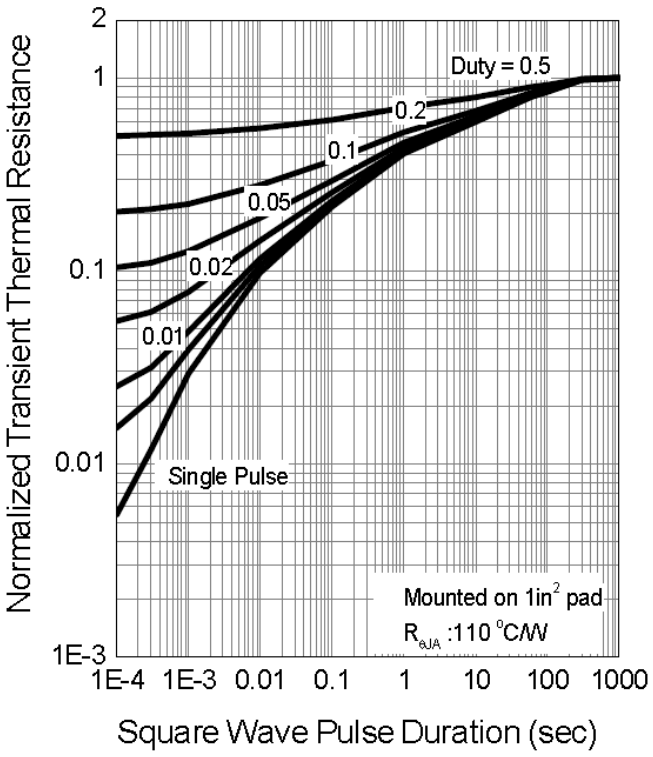


Typical Operating Characteristics(Cont.)

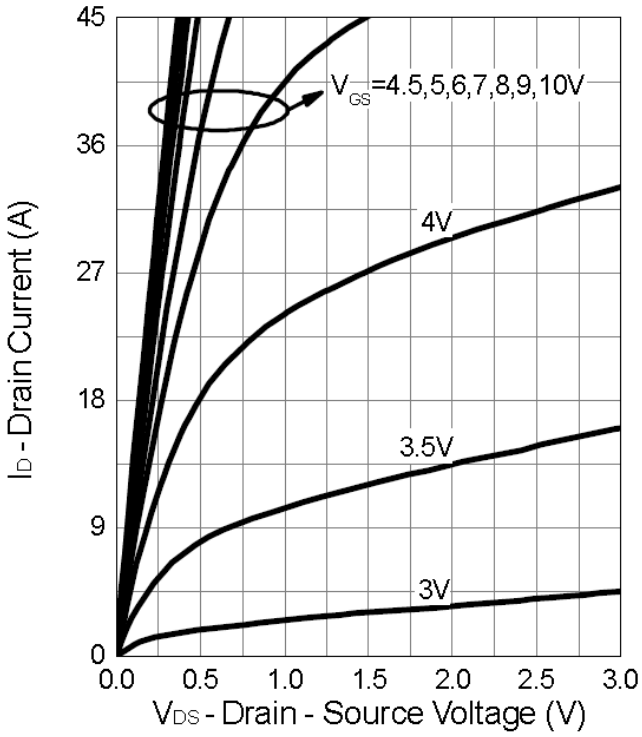
Safe Operation Area



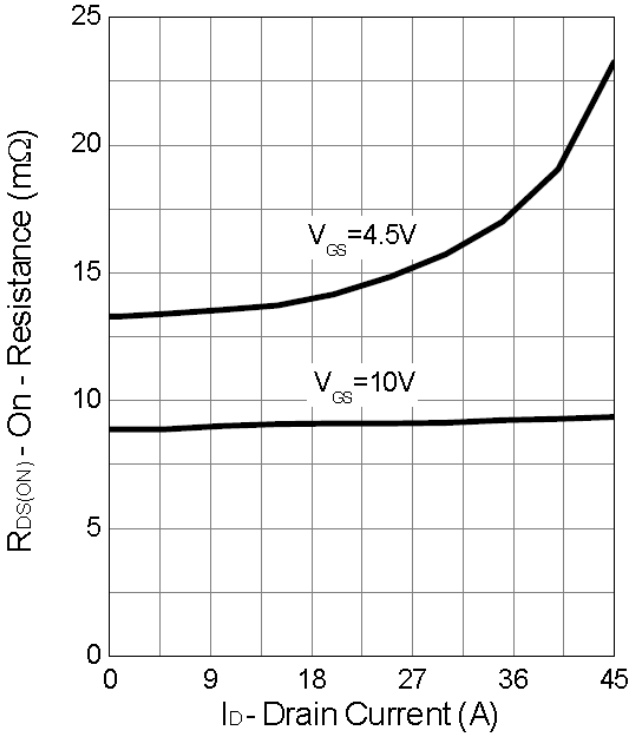
Thermal Transient Impedance



Output Characteristics

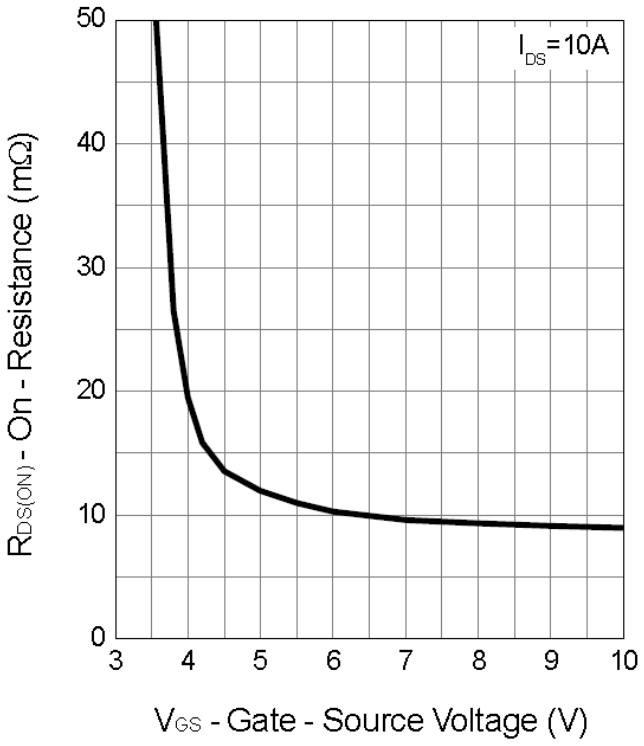


Drain-Source On Resistance

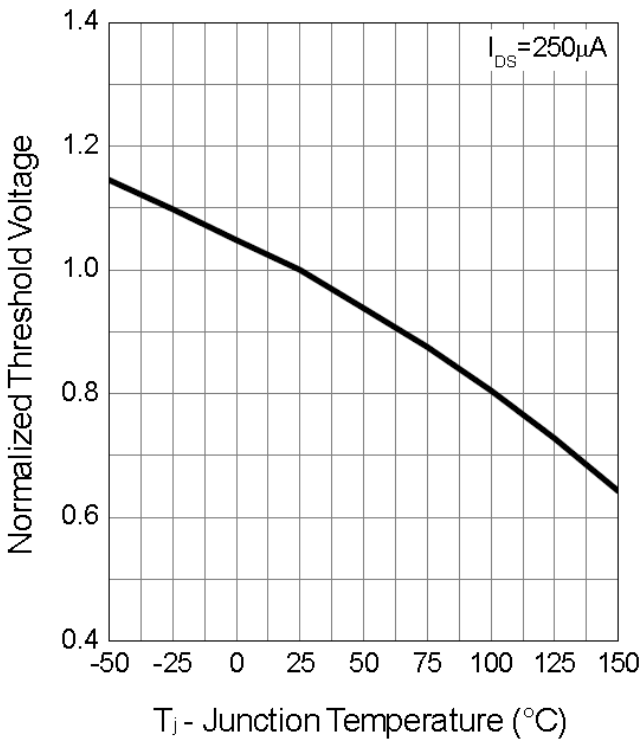


Typical Operating Characteristics (Cont.)

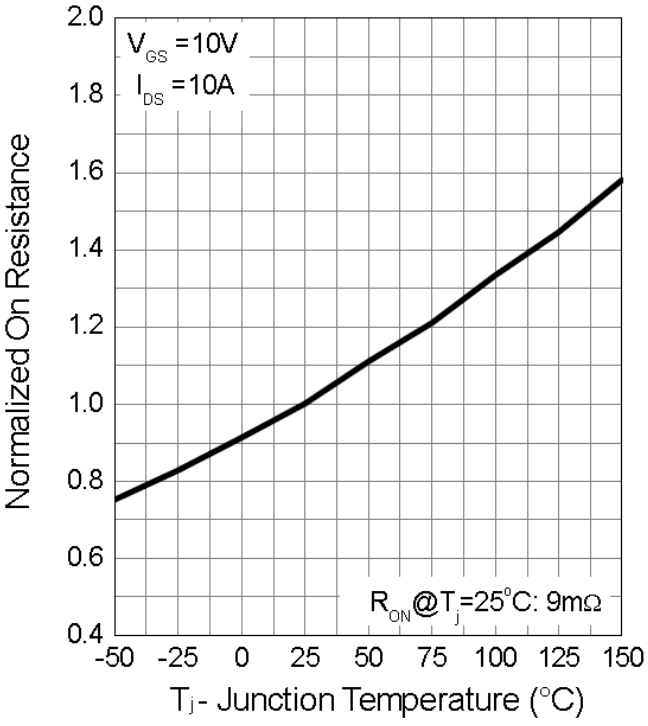
Gate-Source On Resistance



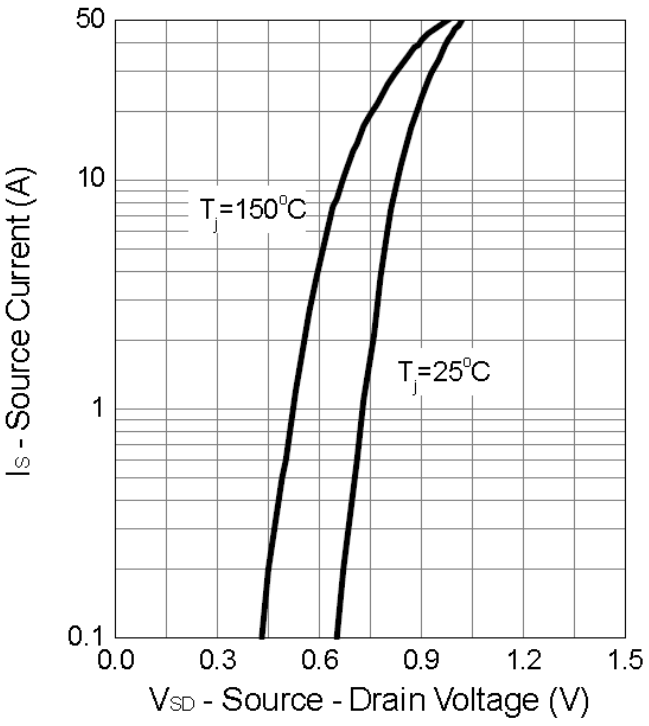
Gate Threshold Voltage



Drain-Source On Resistance

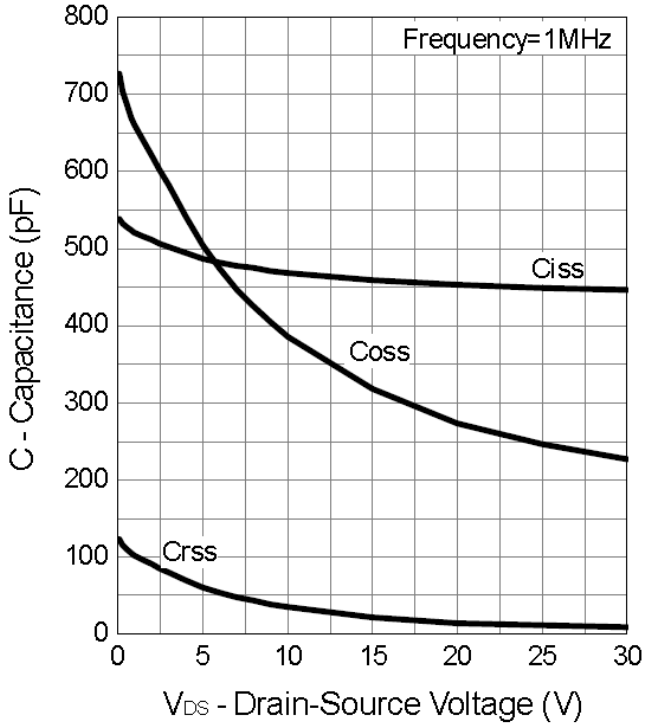


Source-Drain Diode Forward

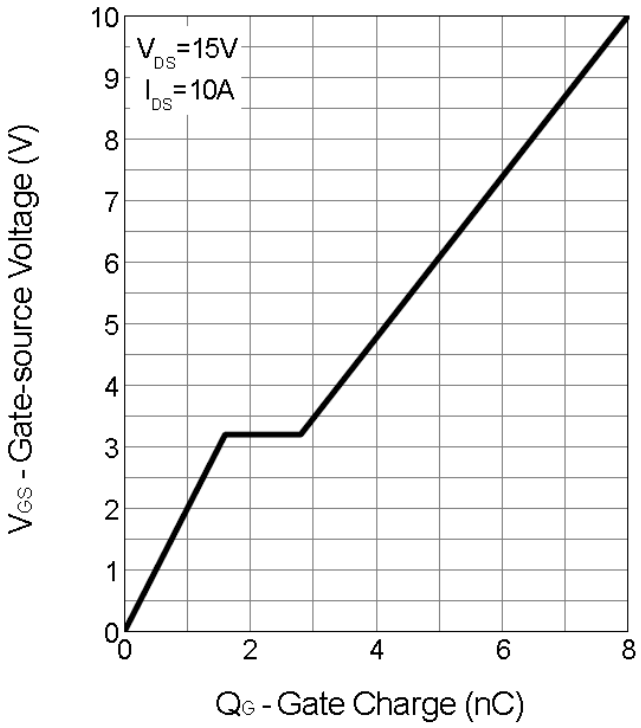


Typical Operating Characteristics (Cont.)

Capacitance

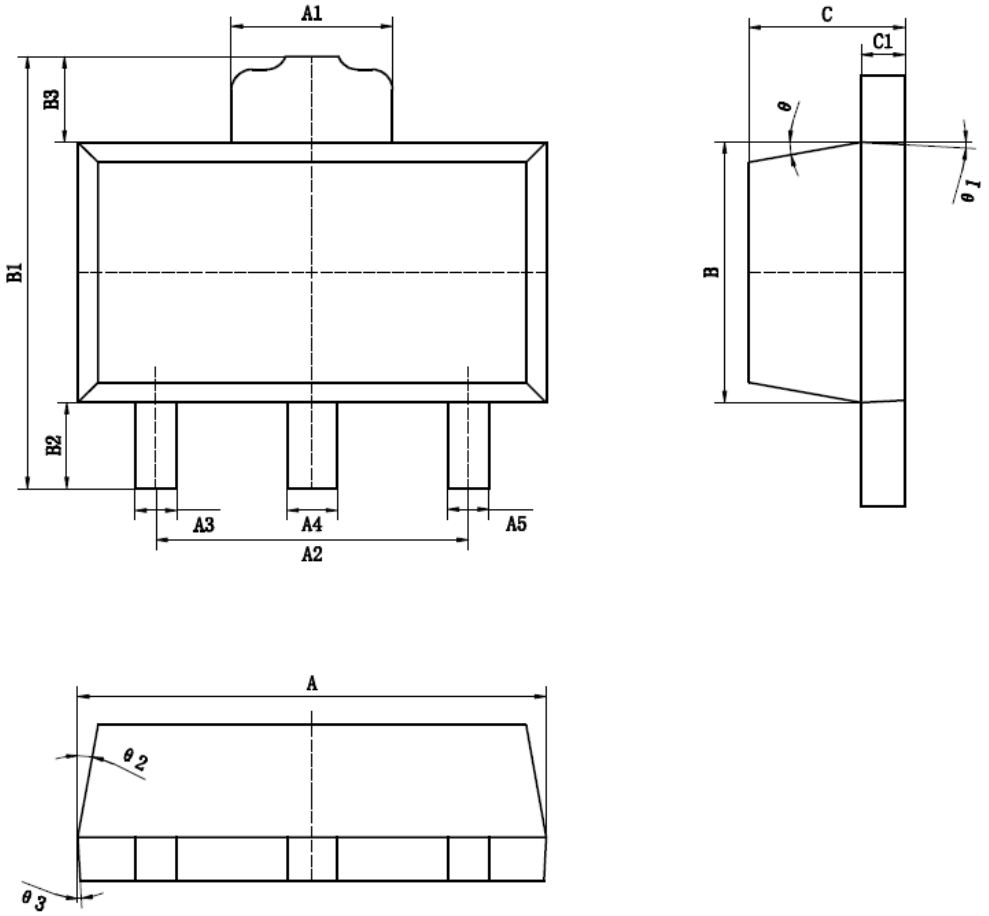


Gate Charge



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