

Dual N-Channel Enhancement Mode MOSFET

TDM3484

DESCRIPTION

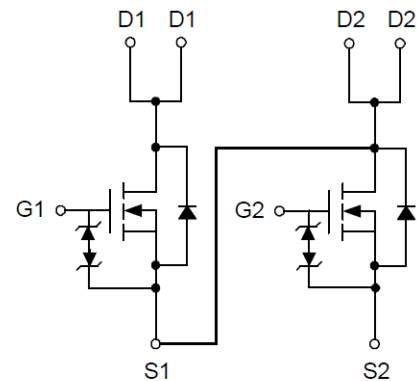
The TDM3484 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

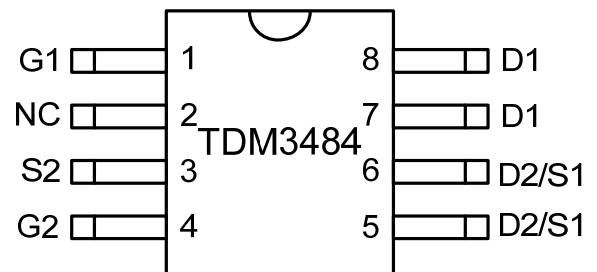
- $R_{DS(ON)} < 18.5m\Omega$ @ $V_{GS}=4.5V$
 $R_{DS(ON)} < 15m\Omega$ @ $V_{GS}=10V$
- High Power and current handling capability
- Lead free product is available
- SOP-8 Package

Application

- PWM applications
- Load switch
- Power management



N-Channel MOSFET



Top of SOP8

ABSOLUTE MAXIMUM RATINGS($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current @ Continuous	I_D ($T_A=25^\circ\text{C}$)	12	A
	I_D ($T_A=70^\circ\text{C}$)	9.6	A
Drain Current @ Current-Pulsed (Note 1)	I_{DM} ($T_C=25^\circ\text{C}$)	60	A
Drain Current @ Continuous	I_D ($T_C=25^\circ\text{C}$)	43	A
	I_D ($T_C=100^\circ\text{C}$)	28	A
Maximum Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	2	W
Maximum Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ($t < 10s$)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
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ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

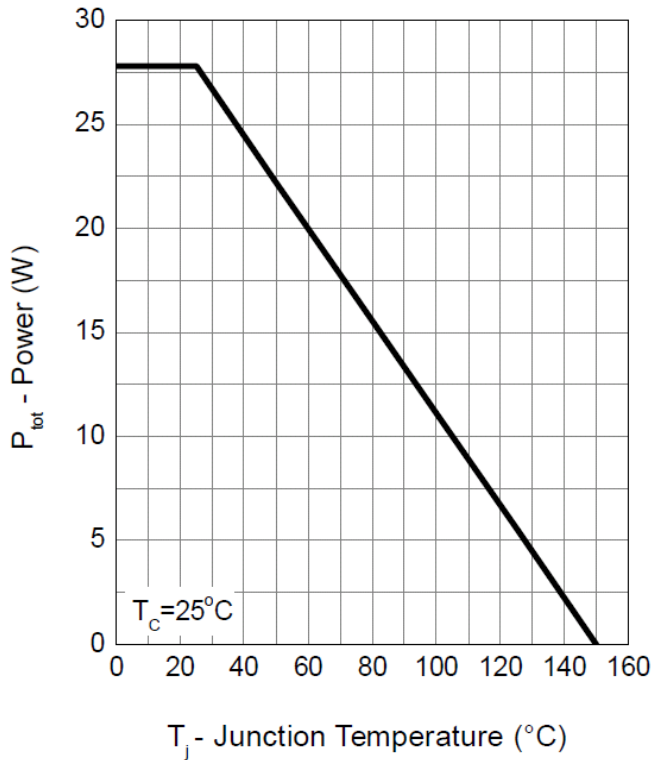
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V,V _{GS} =0V	-	-	1	μ A
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±10	μ A
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1.4	1.7	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =8A	-	14.6	18.5	mΩ
		V _{GS} =10V, I _D =15A	-	11	15	mΩ
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V, F=1.0MHz	-	700	-	PF
Output Capacitance	C _{oss}		-	191	-	PF
Reverse Transfer Capacitance	C _{rss}		-	30	-	PF
SWITCHING CHARACTERISTICS (Note 3)						
Turn-on Delay Time	t _{d(on)}	V _{DS} =20V, R _L =20Ω, V _{GEN} =10V,R _G =6Ω I _D =1A	-	10	-	nS
Turn-on Rise Time	t _r		-	6.6	-	nS
Turn-Off Delay Time	t _{d(off)}		-	18	-	nS
Turn-Off Fall Time	t _f		-	12	-	nS
Total Gate Charge	Q _g	V _{DS} =20V,I _D =15A,V _{GS} =4.5V	-	5.1	-	nC
Gate-Source Charge	Q _{gs}		-	2.9	-	nC
Gate-Drain Charge	Q _{gd}		-	1.1	-	nC
Body Diode Reverse Recovery Time	T _{rr}	I _F =5A, dI/dt=100A/μs	-	18.8	-	nS
Body Diode Reverse Recovery Charge	Q _{rr}		-	4.5	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 2)	V _{SD}	V _{GS} =0V,I _S =20A	-	0.8	1.1	V

NOTES:

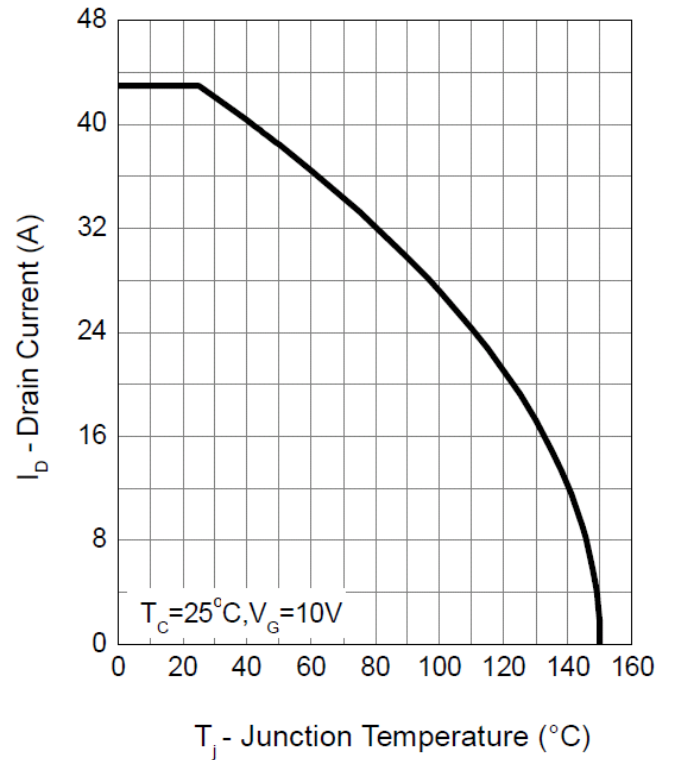
1. Pulse width limited by max. junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production testing

Typical Operating Characteristics

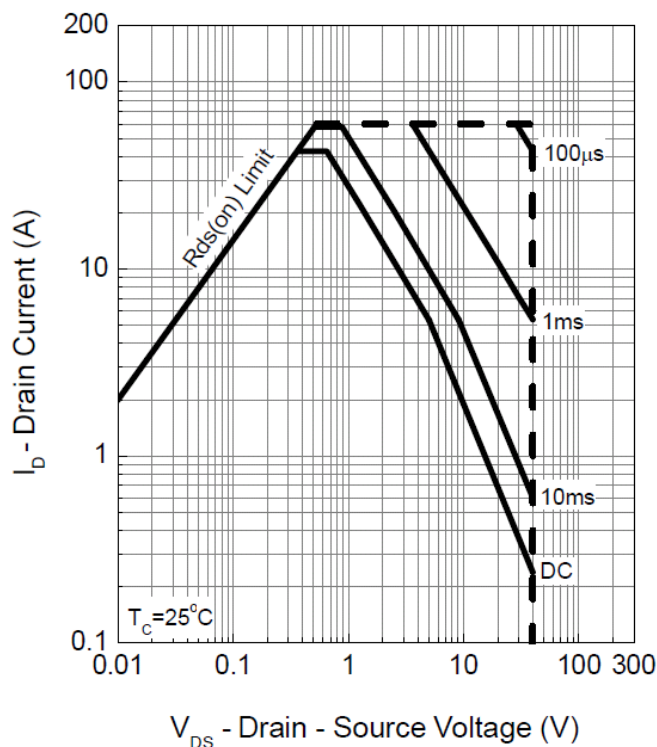
Power Dissipation



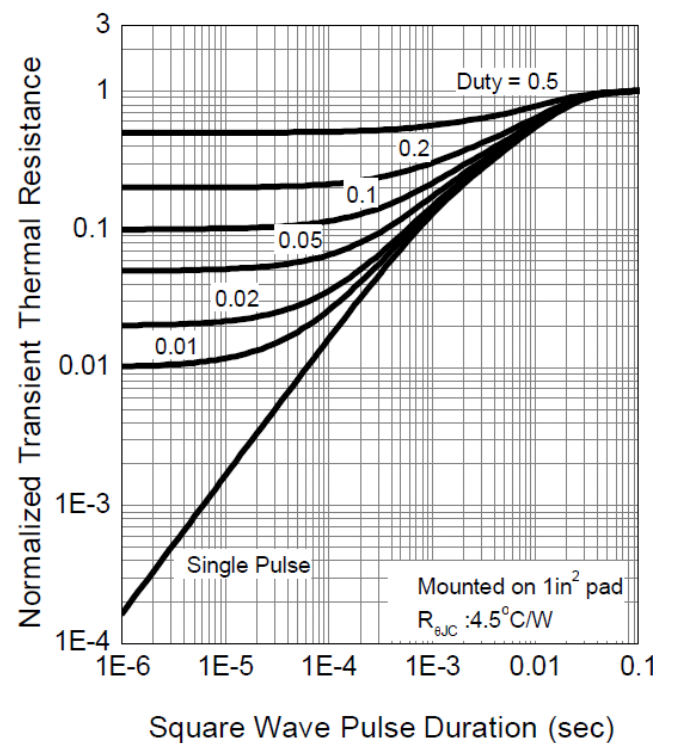
Drain Current



Safe Operation Area

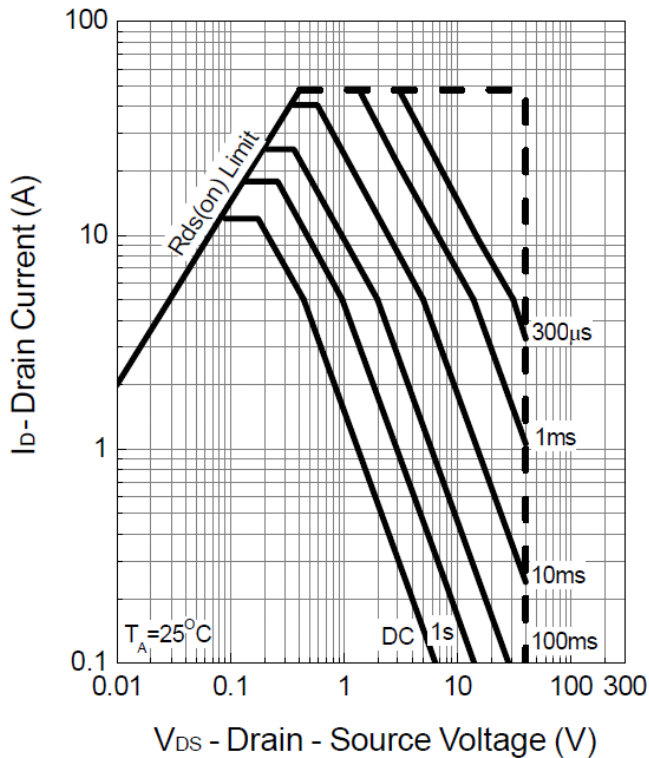


Thermal Transient Impedance

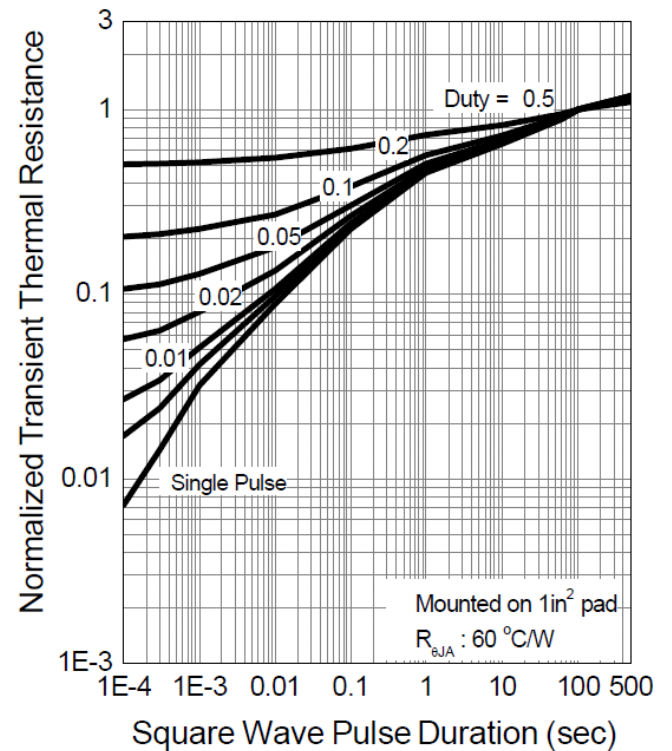


Typical Operating Characteristics(Cont.)

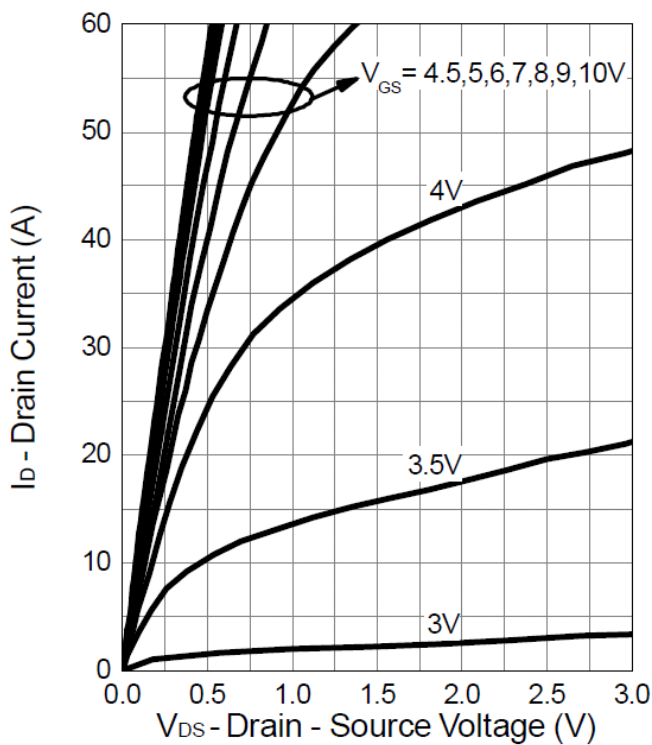
Safe Operation Area



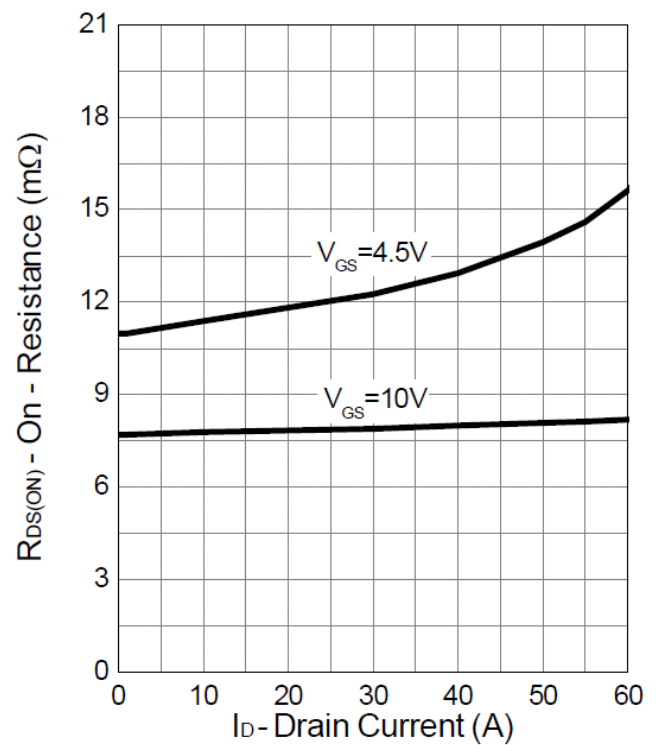
Thermal Transient Impedance



Output Characteristics

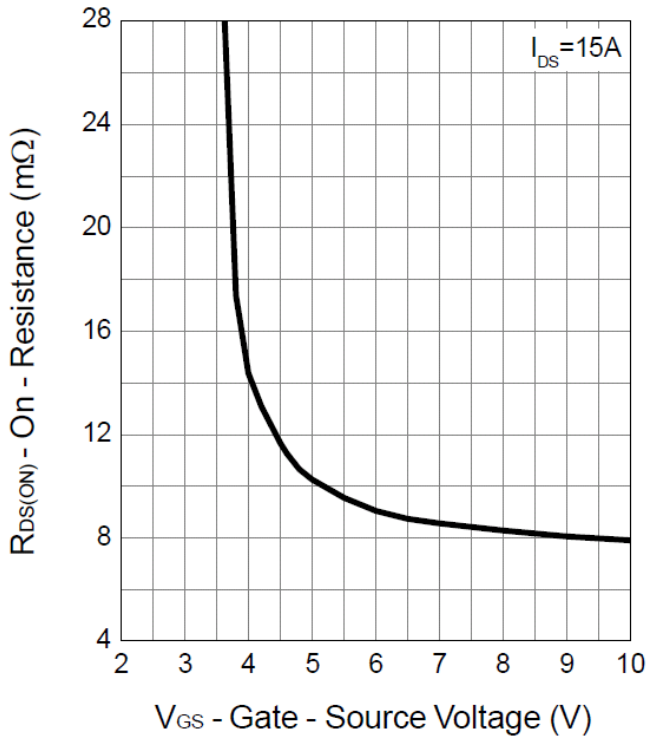


Drain-Source On Resistance

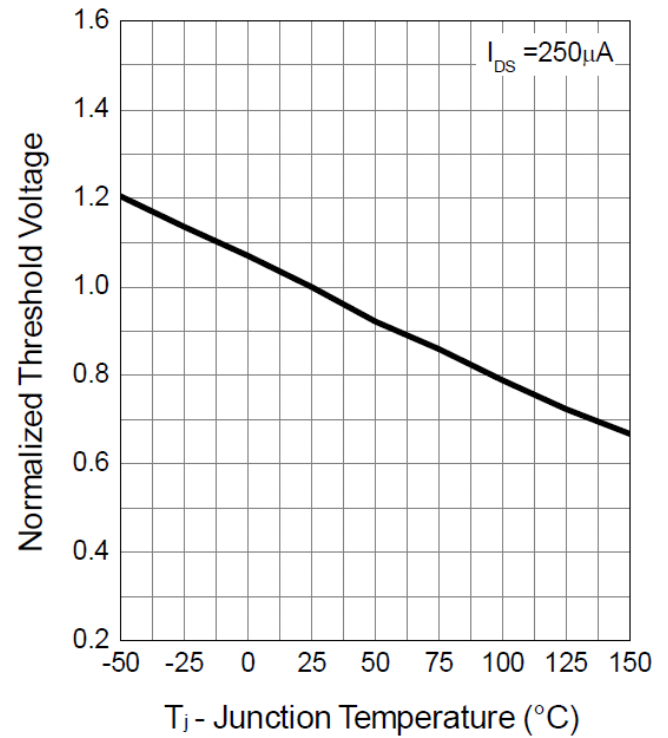


Typical Operating Characteristics(Cont.)

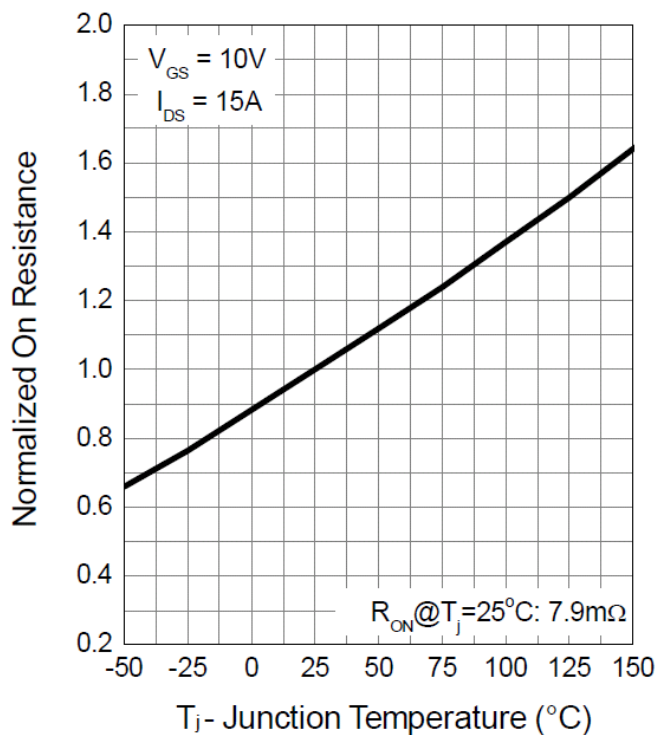
Gate-Source On Resistance



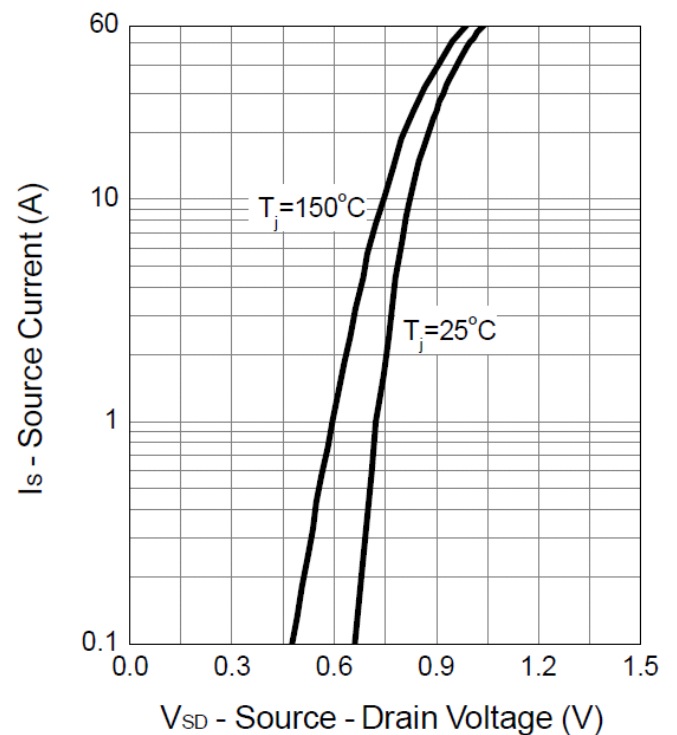
Gate Threshold Voltage



Drain-Source On Resistance

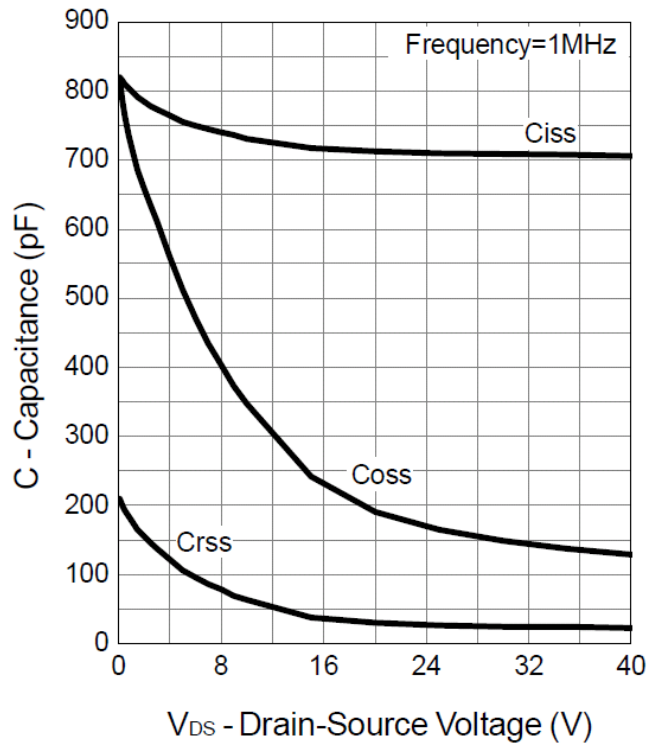


Source-Drain Diode Forward

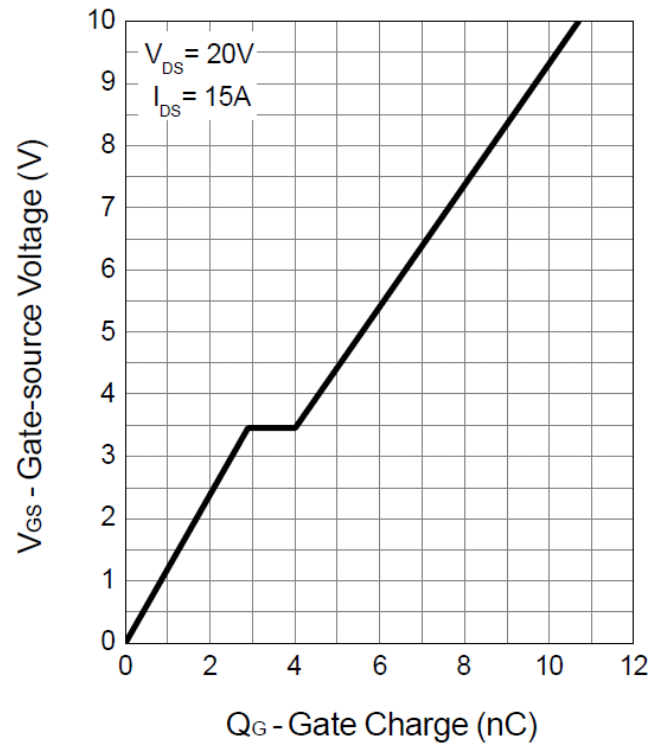


Typical Operating Characteristics(Cont.)

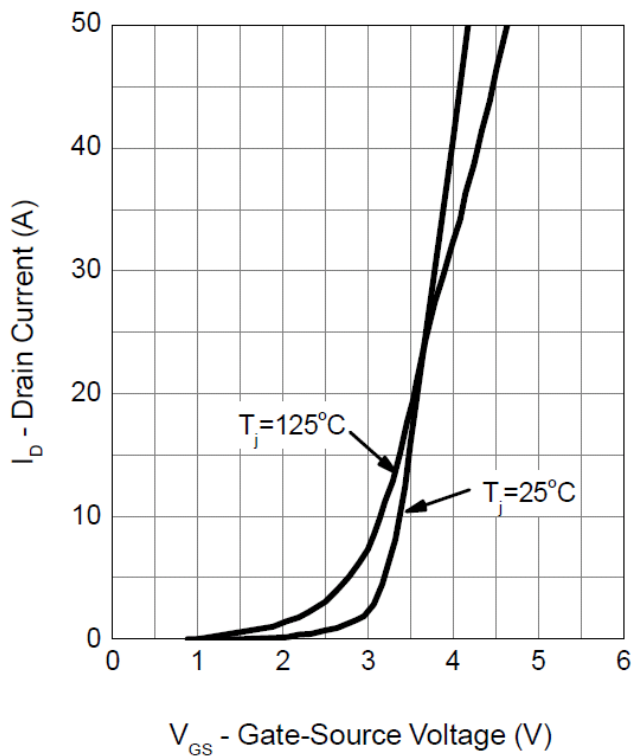
Capacitance



Gate Charge



Transfer Characteristics

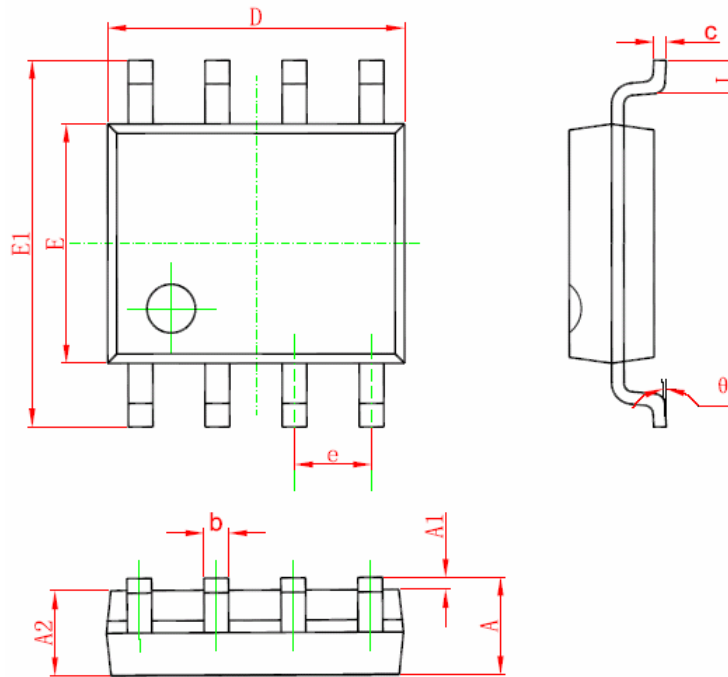


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Package Information

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