Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	N-channel	P-channel	Units
Drain-Source Voltage			V_{DSS}	100	-100	V
Gate-Source Voltage			V_{GSS}	±20	±20	V
Continuous Drain Current, V_{GS} = 10V (Note 8)	Steady State	T_A = +25°C (Note 6) T_A = +70°C (Note 6) T_A = +25°C (Note 5)	I_D	1.1 0.9 1.0	-0.9 -0.8 -0.8	A
Maximum Body Diode Forward Current (Note 6)			I_S	2.3	-2.2	A
Pulsed Drain Current (Note 7)			I_{DM}	5.2	-4.5	A
Pulsed Source Current (Note 7)			I_{SM}	5.2	-4.5	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 8) Linear Derating Factor	T_A = +25°C (Note 5)	P_D	1.3 10.4	W mW/°C
Total Power Dissipation (Note 8) Linear Derating Factor	T_A = +25°C (Note 6)	P_D	1.3 10.4	W mW/°C
Thermal Resistance, Junction to Ambient (Note 8)	Steady State (Note 5)	$R_{\theta JA}$	94.5	°C/W
	Steady State (Note 6)		73.3	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
5. For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions, with the heat sink split into two equal areas one for each drain connection.
6. For a device surface mounted on FR4 PCB measured at t ≤10 seconds.
7. Repetitive rating 50mm x 50mm x 1.6mm FR4 PCB, D = 0.02, pulse width 300µs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.
8. For device with one active die.

Electrical Characteristics N-CHANNEL (@T_A = +25°C, unless otherwise specified.)

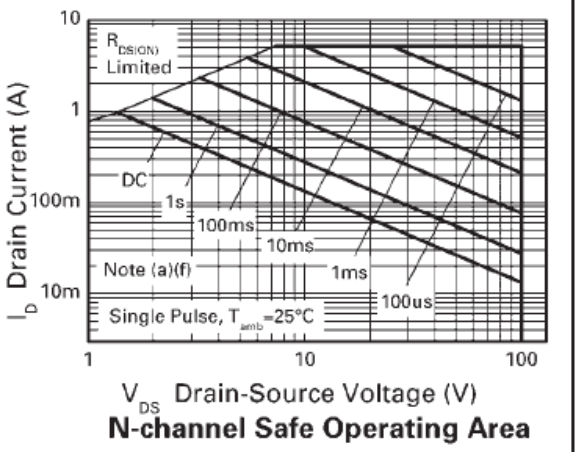
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 10)						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	μA	V_{DS} = 100V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 10)						
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	—	4.0	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance (Note 9)	$R_{DS(ON)}$	—	—	0.7	Ω	V_{GS} = 10V, I_D = 1.5A
		—	—	0.9		V_{GS} = 6.0V, I_D = 1.0A
Forward Transfer Admittance (Notes 9 & 11)	g_{fs}	—	1.6	—	S	V_{DS} = 15V, I_D = 1.0A
Diode Forward Voltage (Note 9)	V_{SD}	—	—	0.95	V	V_{GS} = 0V, I_S = 1.5A
DYNAMIC CHARACTERISTICS (Note 11)						
Input Capacitance	C_{iss}	—	138	—	pF	V_{DS} = 60V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	12	—		
Reverse Transfer Capacitance	C_{rss}	—	6	—		
Total Gate Charge	Q_g	—	2.9	—	nC	V_{DS} = 50V, I_D = 1.0A, V_{GS} = 10V
Gate-Source Charge	Q_{gs}	—	0.7	—		
Gate-Drain Charge	Q_{gd}	—	1.0	—		
Turn-On Delay Time	$t_{D(ON)}$	—	1.8	—	ns	V_{DD} = 50V, V_{GS} = 10V, I_D = 1.0A, R_G = 6.0Ω
Turn-On Rise Time	t_R	—	1.5	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	4.1	—		
Turn-Off Fall Time	t_F	—	2.1	—		
Reverse Recovery Time	t_{RR}	—	27	—	ns	I_S = 1.8A, di/dt = 100A/μs
Reverse Recovery Charge	Q_{rr}	—	12	—	nC	

Electrical Characteristics P-CHANNEL (@T_A = +25°C, unless otherwise specified.)

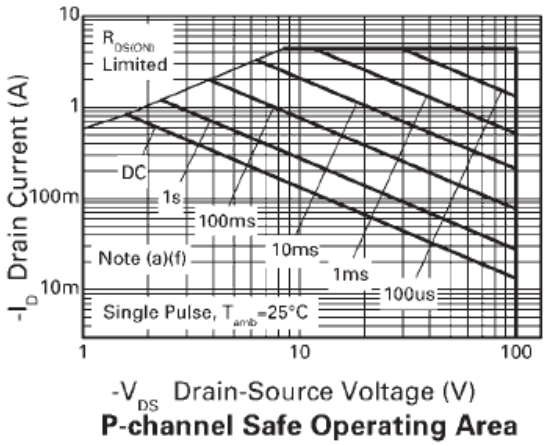
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 10)						
Drain-Source Breakdown Voltage	BV_{DSS}	-100	—	—	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1.0	μA	V_{DS} = -100V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 10)						
Gate Threshold Voltage	$V_{GS(TH)}$	-2.0	—	-4.0	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance (Note 9)	$R_{DS(ON)}$	—	—	1.0	Ω	V_{GS} = -10V, I_D = -0.6A
		—	—	1.45		V_{GS} = -6.0V, I_D = -0.5A
Forward Transfer Admittance (Notes 9 & 11)	g_{fs}	—	1.2	—	S	V_{DS} = -15V, I_D = -0.6A
Diode Forward Voltage (Note 9)	V_{SD}	—	-0.85	-0.95	V	V_{GS} = 0V, I_S = -0.75A
DYNAMIC CHARACTERISTICS (Note 11)						
Input Capacitance	C_{iss}	—	141	—	pF	V_{DS} = -50V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	13.1	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	10.8	—	pF	
Gate Charge (V_{GS} = -5.0V)	Q_g	—	1.6	—	nC	V_{DS} = -50V, I_D = -0.6A
Total Gate Charge (V_{GS} = -10V)	Q_g	—	3.5	—	nC	
Gate-Source Charge	Q_{gs}	—	0.6	—	nC	
Gate-Drain Charge	Q_{gd}	—	1.6	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	1.6	—	ns	V_{DD} = -50V, V_{GS} = -10V, R_G = 6.0Ω, I_D = -1.0A
Turn-On Rise Time	t_R	—	2.1	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	5.9	—	ns	
Turn-Off Fall Time	t_F	—	3.3	—	ns	
Reverse Recovery Time	t_{RR}	—	29	—	ns	I_S = -0.9A, di/dt = 100A/μs
Reverse Recovery Charge	Q_{rr}	—	31	—	nC	

Notes: 9. Measured under pulsed conditions. Width≤300μs. Duty cycle ≤ 2%.
10. Short duration pulse test used to minimize self-heating effect.
11. Guaranteed by design. Not subject to product testing.

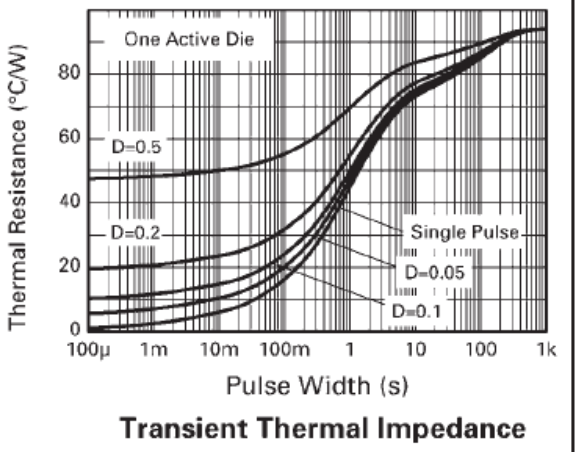
Typical Characteristics



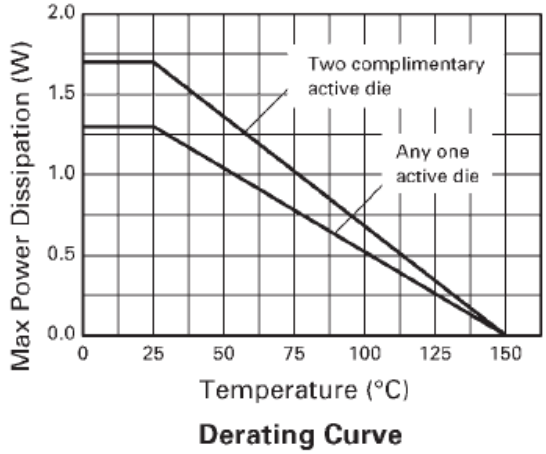
N-channel Safe Operating Area



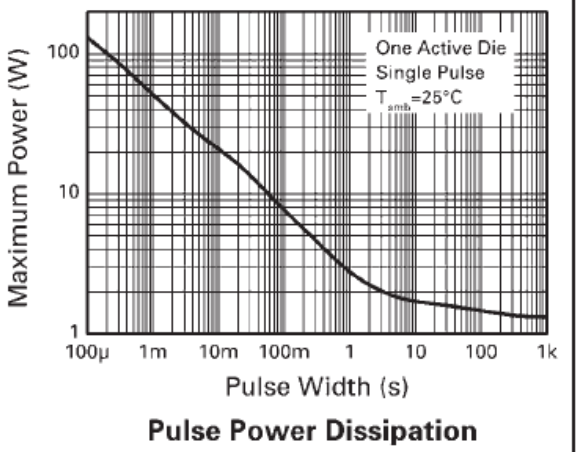
P-channel Safe Operating Area



Transient Thermal Impedance

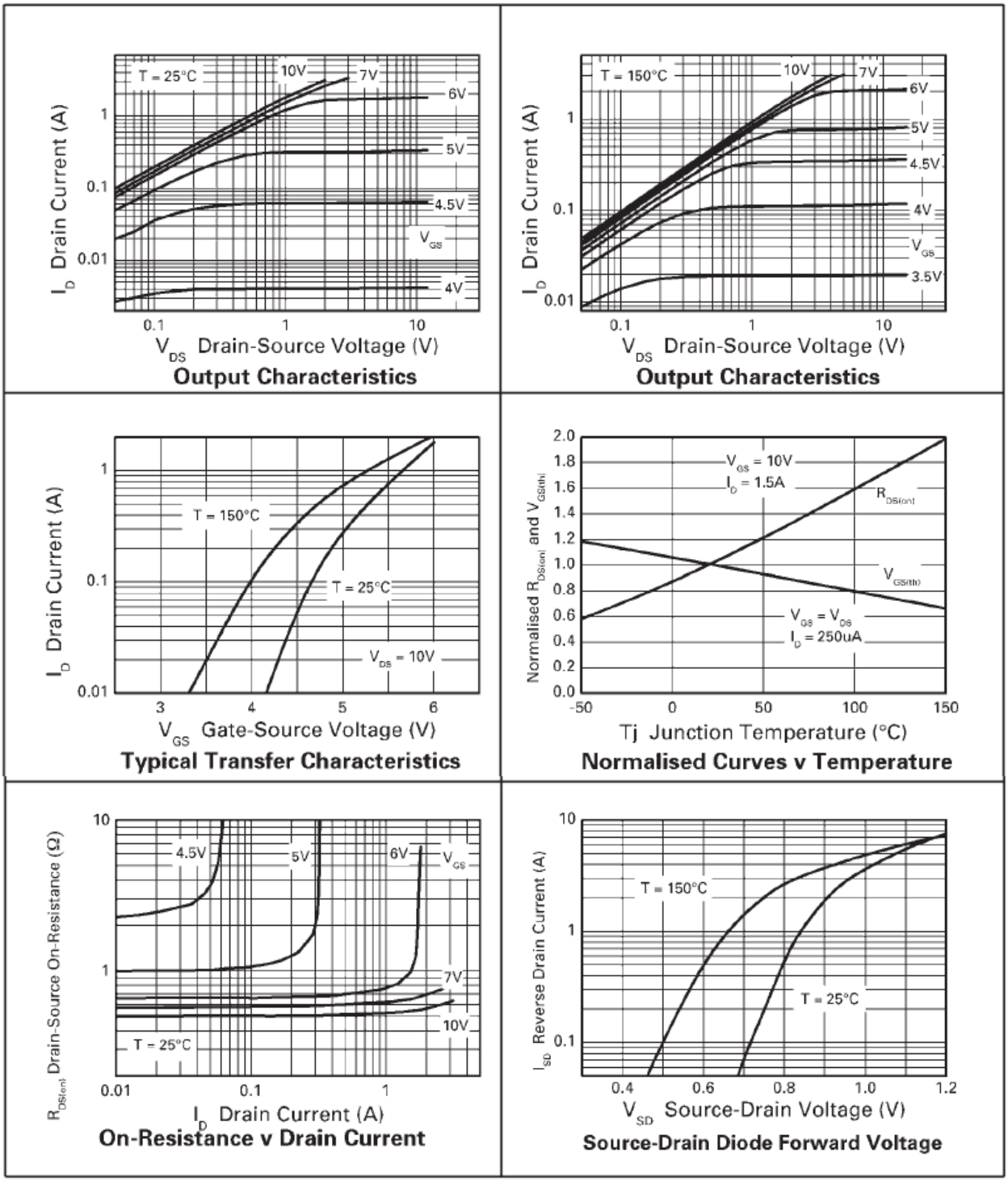


Derating Curve

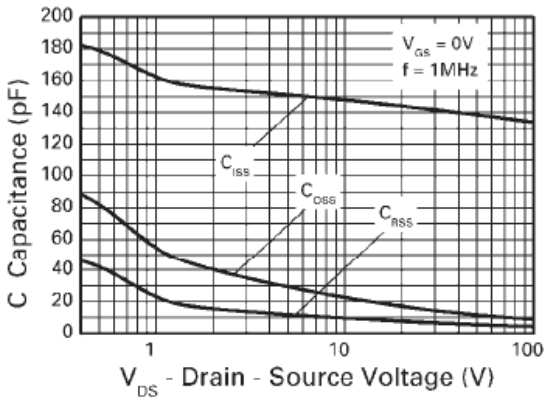


Pulse Power Dissipation

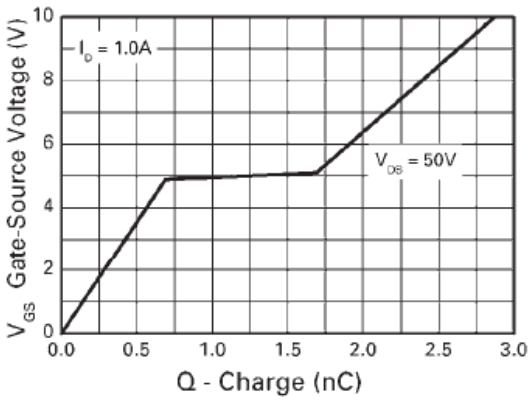
Typical Characteristics (N-Channel)



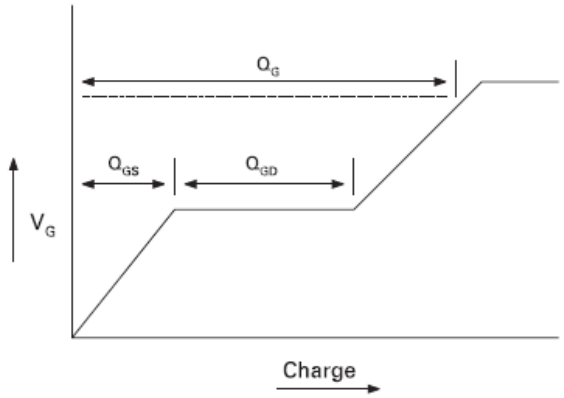
Typical Characteristics (N-Channel) (Cont.)



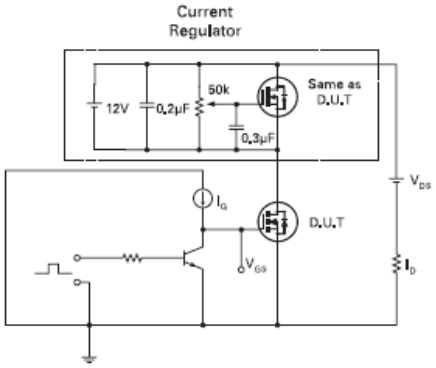
Capacitance v Drain-Source Voltage



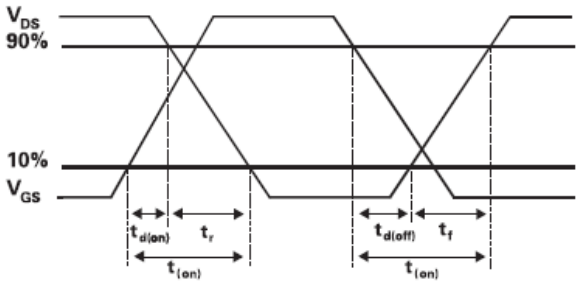
Gate-Source Voltage v Gate Charge



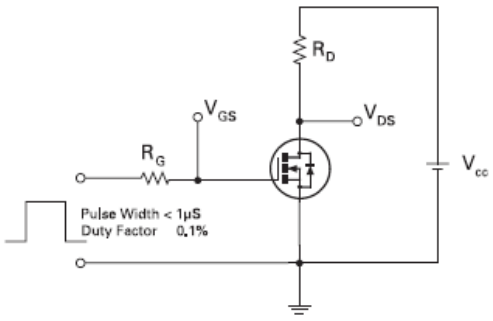
Basic Gate Charge Waveform



Gate Charge Test Circuit

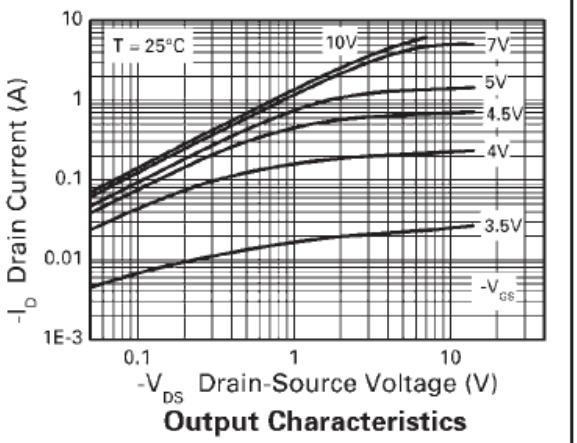


Switching Time Waveforms

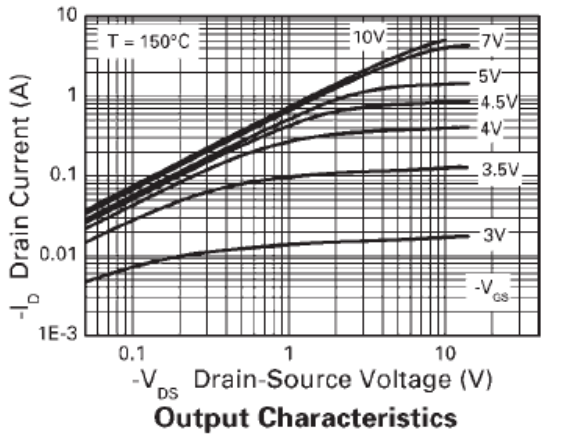


Switching Time Test Circuit

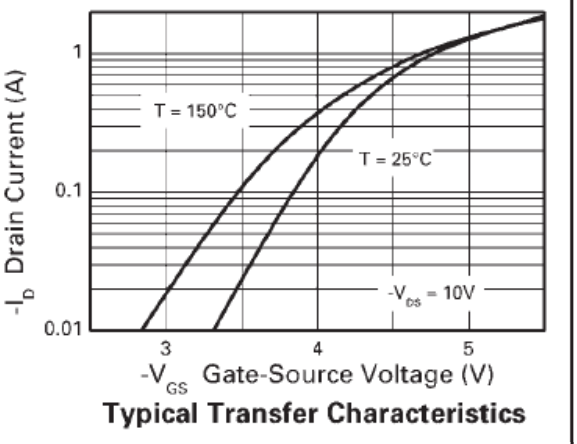
Typical Characteristics (P-Channel)



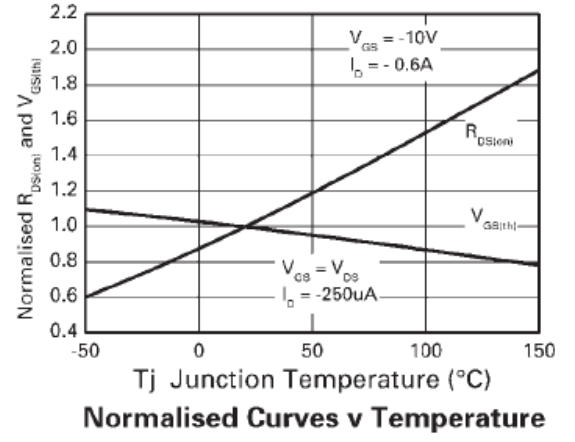
Output Characteristics



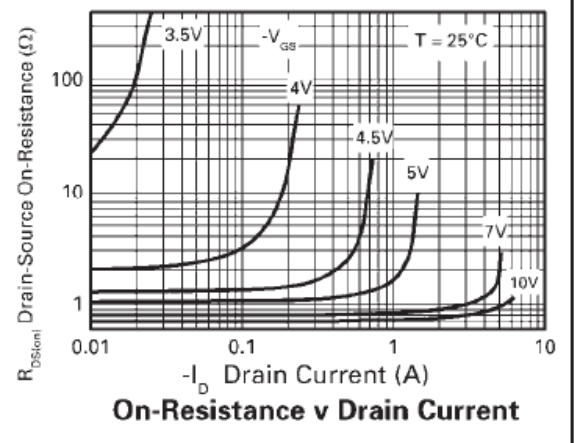
Output Characteristics



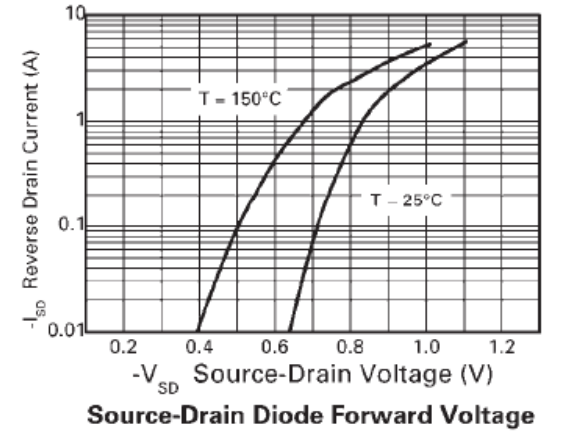
Typical Transfer Characteristics



Normalised Curves v Temperature

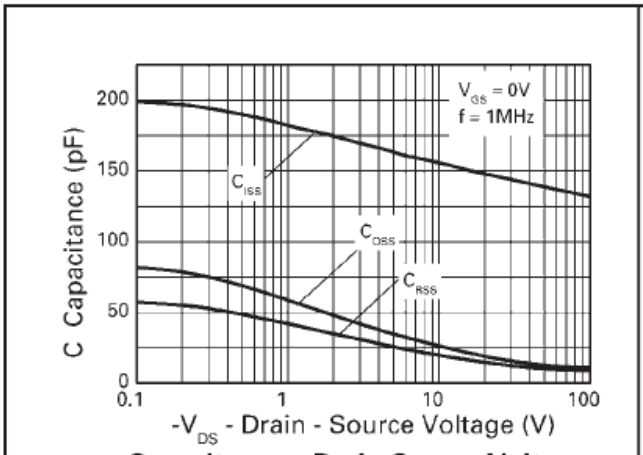


On-Resistance v Drain Current

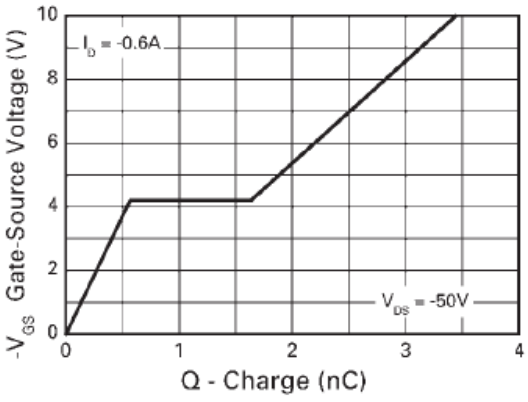


Source-Drain Diode Forward Voltage

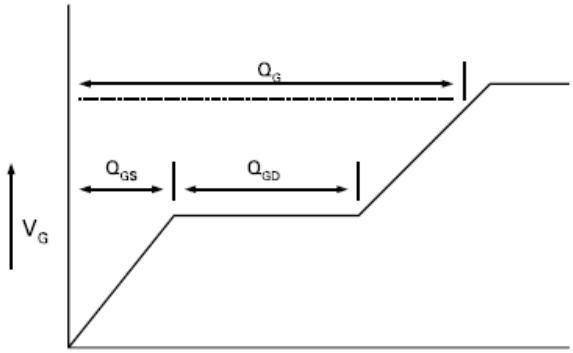
Typical Characteristics (P-Channel) (Cont.)



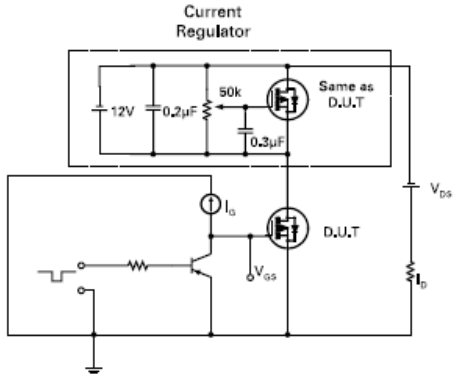
Capacitance v Drain-Source Voltage



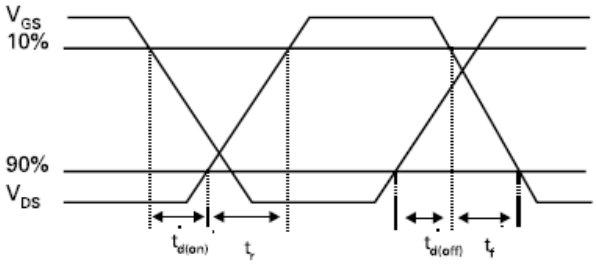
Gate-Source Voltage v Gate Charge



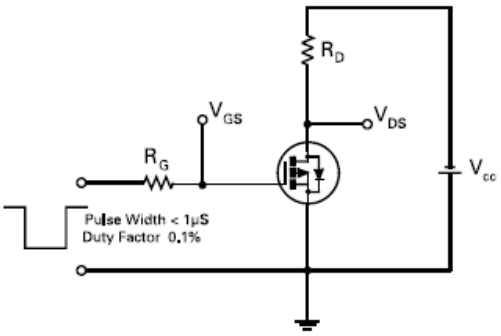
Basic Gate Charge Waveform



Gate Charge Test Circuit



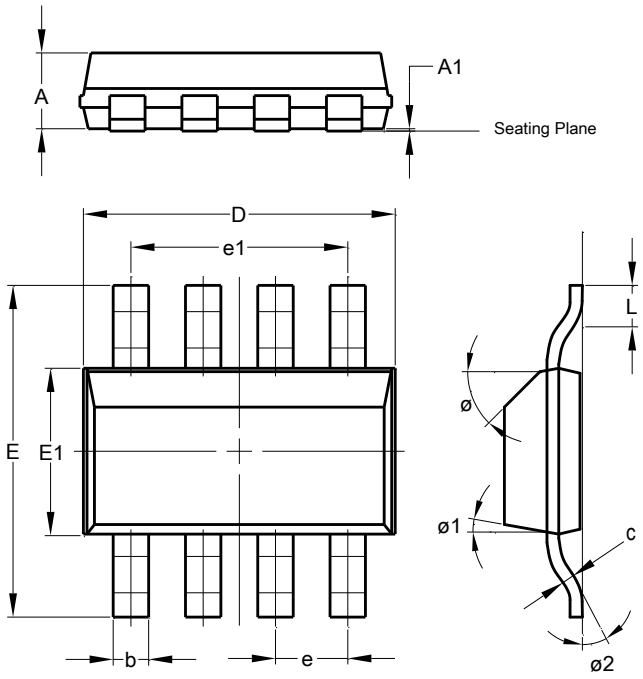
Switching Time Waveforms



Switching Time Test Circuit

Package Outline Dimensions

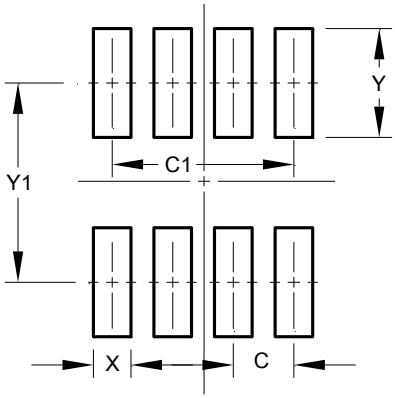
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SM-8			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	1.60
A1	0.02	0.10	0.04
b	0.70	0.90	0.80
c	0.24	0.32	0.28
D	6.30	6.70	6.60
e	1.53 REF		
e1	4.59 REF		
E	6.70	7.30	7.00
E1	3.30	3.70	3.50
L	0.75	1.00	0.90
Ø	--	--	45°
Ø1	--	15°	--
Ø2	--	--	10°
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
C	1.52
C1	4.60
X	0.95
Y	2.80
Y1	6.80

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com