DESCRIPTION

AM6602 is available in a SOT-26 package.

FEATURES

- **N-Channel**
  30V/4.9A,
  $R_{DS(ON)}$=39mΩ(max.) @ V_{GS}=10V
  $R_{DS(ON)}$=68mΩ(max.) @ V_{GS}=4.5V
- **P-Channel**
  -30V/-3A,
  $R_{DS(ON)}$=100mΩ(max.) @ V_{GS}=-10V
  $R_{DS(ON)}$=170mΩ(max.) @ V_{GS}=-4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Available in a SOT-26 package.

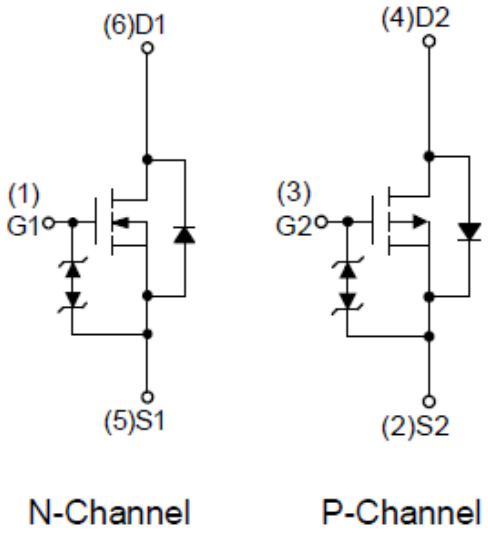
ORDERING INFORMATION

Package Type	Part Number	
SOT-26	E6	AM6602E6R
		AM6602E6VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

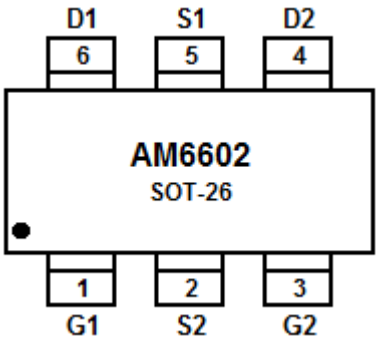
APPLICATION

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- Load Switch

PIN DESCRIPTION



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	G1	Gate1
2	S2	Source2
3	G2	Gate2
4	D2	Drain2
5	S1	Source1
6	D1	Drain1

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted

Parameter		N Channel	P Channel	Units
V_{DSS}, Drain-Source Voltage		30	-30	V
V_{GSS}, Gate-Source Voltage		±20	±20	V
I_D, Continuous Drain Current	T_A=25℃	4.9	-3	A
	T_A=70℃	3.9	-24	
I_{DM}, 300μs Pulsed Drain Current	V_{GS}=10V	19	-12	
I_S, Diode Continuous Forward Current		1		
T_J, Maximum Junction Temperature		150		℃
T_{STG}, Storage Temperature Range		-55~150		℃
P_D, Maximum Power Dissipation	T_A=25°C	1.4		W
	T_A=70℃	0.9		
$R_{\theta JA}$[NOTE1], Thermal Resistance-Junction to Ambient	t ≤ 10s	90		°C/W
	Steady state	125		

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: Surface Mounted on 1in² pad area.

N CHANNEL ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V	-	-	1	μA
		T_J=85°C			30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	1.3	1.8	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±10	μA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE2	V_{GS}=10V,I_{DS}=4.9A	-	32	39	mΩ
		V_{GS}-4.5V,I_{DS}=3A	-	52	68	
Diode Characteristics						
Diode Forward Voltage	V_{SD} NOTE2	I_{SD}=1A,V_{GS}=0V	-	0.75	1.1	V
Reverse Recovery Time	t_{rr}	I_{SD}=4.9A,	-	9.2	-	ns
Reverse Recovery Charge	Q_{rr}	dI_{SD}/dt=100A/μs	-	4.3	-	nC
Dynamic Characteristics NOTE3						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2.3	-	Ω
Input Capacitance	C_{ISS}	V_{GS}=0V,	-	215	-	pF
Output Capacitance	C_{OSS}	V_{DS}=15V,	-	37	-	
Reverse Transfer Capacitance	C_{RSS}	Frequency=1.0MHz	-	28	-	
Turn-on Delay Time	$t_{D(ON)}$	V_{DD}=15V, R_L=15Ω I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	5.3	8	ns
Turn-on Rise Time	t_R		-	11	16	
Turn-off Delay Time	$t_{D(OFF)}$		-	12	17	
Turn-off Fall Time	t_F		-	2.6	4	
Gate Charge Characteristics NOTE3						
Total Gate Charge	Q_G	V_{DS}=15V, V_{GS}=4.5V	-	3	-	nC
		I_{DS}=4.9A V_{GS}=10V	-	5.8	-	
Gate-Source Charge	Q_{GS}	V_{DS}=15V, V_{GS}=10V, I_{DS}≡4.9A	-	1.1	-	
Gate-Drain Charge	Q_{GD}		-	1.5	-	
Threshold Gate Charge	Q_{Gth}		-	0.5	-	

NOTE2: Pulse test; pulse width≤300μs, duty cycle≤2%.

NOTE3: Guaranteed by design, not subject to production testing.

P CHANNEL ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

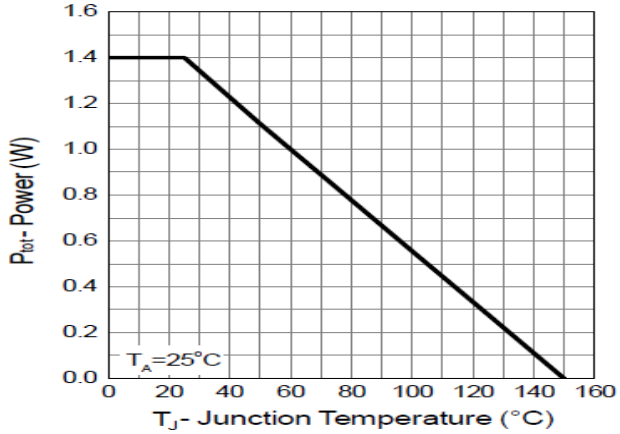
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=-250μA	-1.3	-1.8	-2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±10	μA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE2	V_{GS}=-10V,I_{DS}=-3A	-	82	100	mΩ
		V_{GS}=-4.5V,I_{DS}=-1.9A	-	125	170	
Diode Characteristics						
Diode Forward Voltage	V_{SD} NOTE2	I_{SD}=-1A,V_{GS}=0V	-	-0.75	-1.1	V
Reverse Recovery Time	t_{rr}	I_{SD}=-3A, dI_{SD}/dt=100A/μs	-	19	-	ns
Reverse Recovery Charge	Q_{rr}		-	14	-	nC
Dynamic Characteristics NOTE3						
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	7	-	Ω
Input Capacitance	C_{ISS}	V_{GS}=0V,	-	229	-	pF
Output Capacitance	C_{OSS}	V_{DS}=-15V,	-	42	-	
Reverse Transfer Capacitance	C_{RSS}	Frequency=1.0MHz	-	33	-	
Turn-on Delay Time	$t_{D(ON)}$	V_{DD}=-15V, R_L=15Ω	-	7.2	-	ns
Turn-on Rise Time	t_R	I_{DS}=-1A, V_{GEN}=-10V,	-	9.3	-	
Turn-off Delay Time	$t_{D(OFF)}$	R_G=6Ω	-	15.4	-	
Turn-off Fall Time	t_F		-	3.6	-	
Gate Charge Characteristics NOTE3						
Total Gate Charge	Q_G	V_{DS}=-15V, V_{GS}=-4.5V	-	3.3	-	nC
		I_{DS}=-3A V_{GS}=-10V	-	6.5	-	
Gate-Source Charge	Q_{GS}	V_{DS}=-15V, V_{GS}=-10V,	-	1.1	-	
Gate-Drain Charge	Q_{GD}	I_{DS}=-3A	-	1.1	-	
Threshold Gate Charge	Q_{Gth}		-	0.6	-	

NOTE2: Pulse test; pulse width≤300μs, duty cycle≤2%.

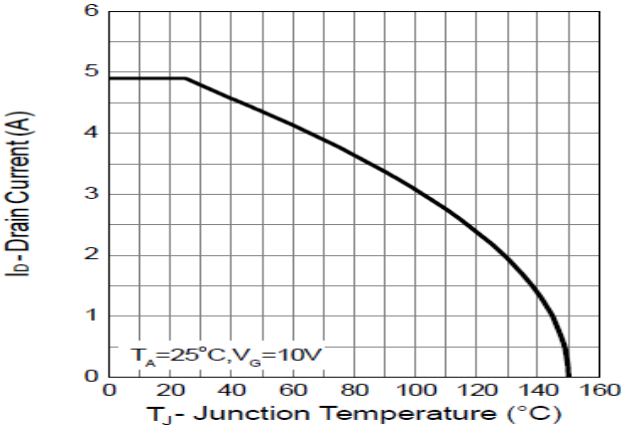
NOTE3: Guaranteed by design, not subject to production testing.

N CHANNEL TYPICAL CHARACTERISTICS

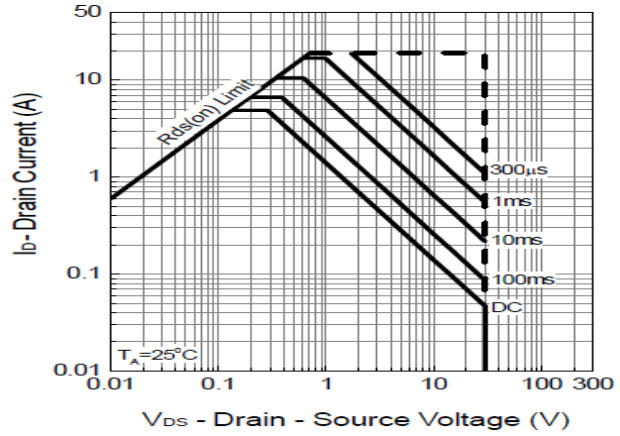
1. Power Dissipation



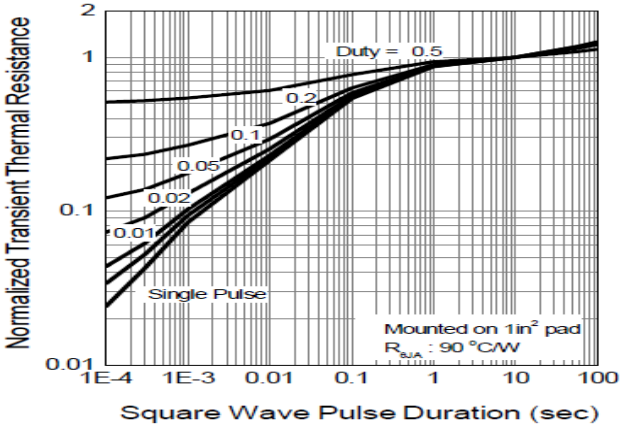
2. Drain Current



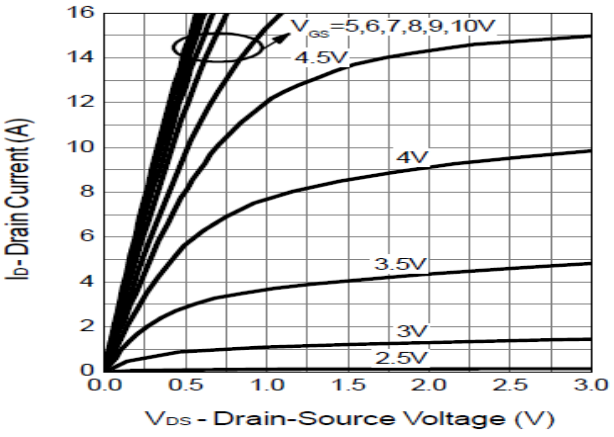
3. Safe Operation Area



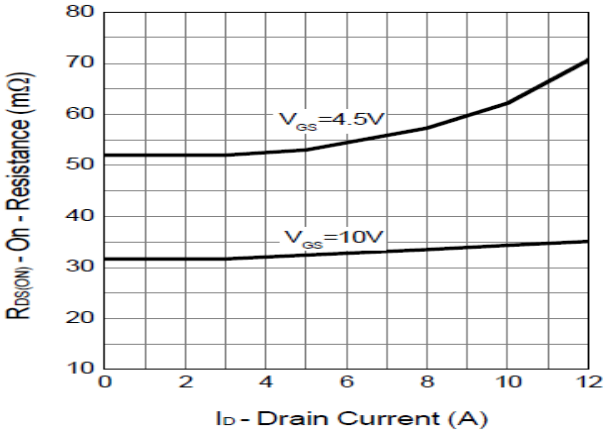
4. Thermal Transient Impedance



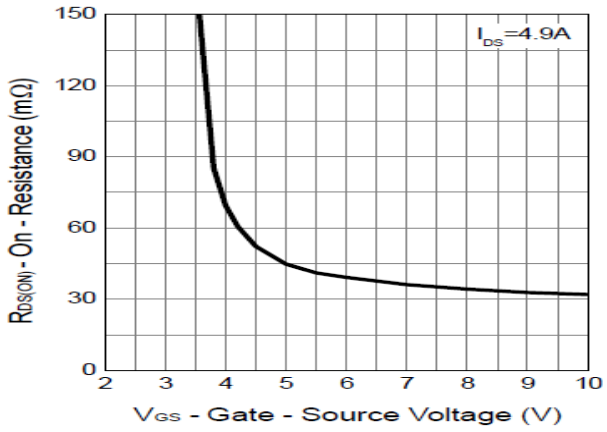
5. Output Characteristics



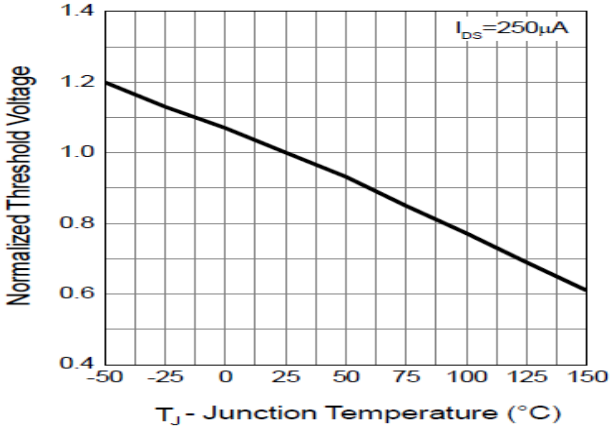
6. Drain-Source On Resistance



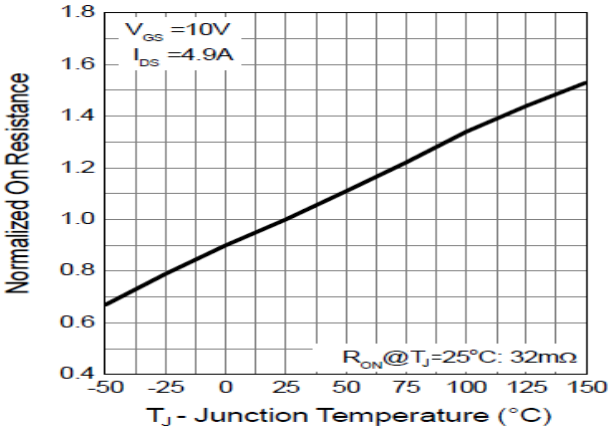
7. Gate-Source On Resistance



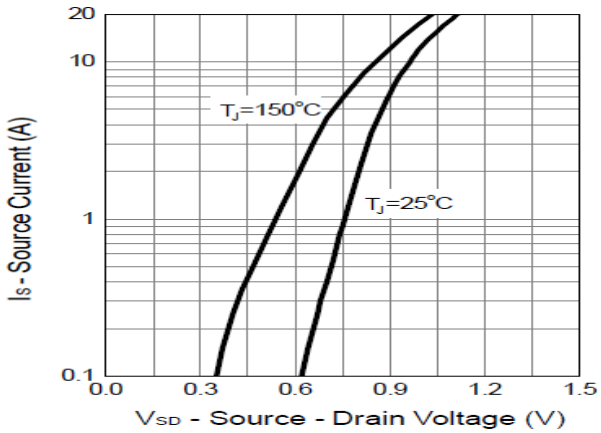
8. Gate Threshold Voltage



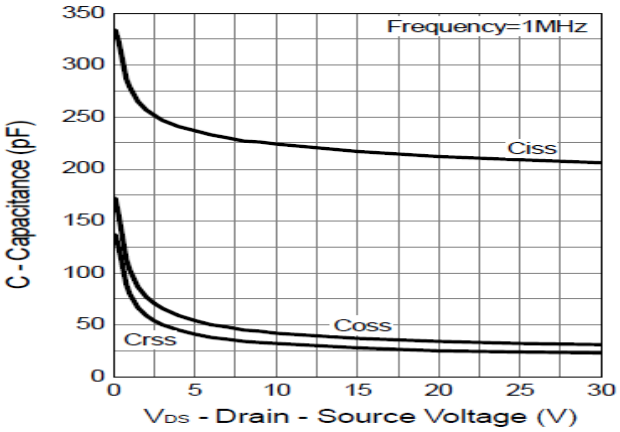
9. Drain-Source On Resistance



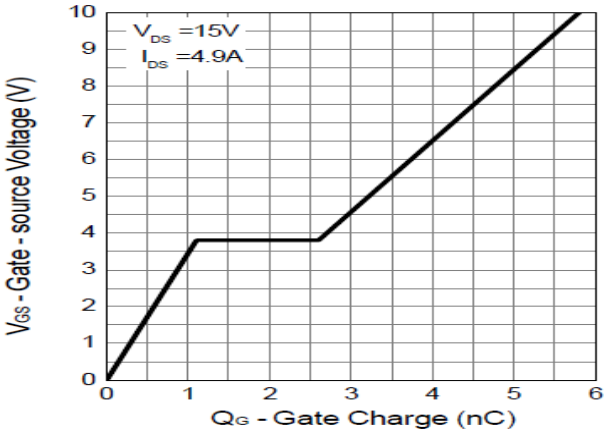
10. Source-Drain Diode Forward



11. Capacitance

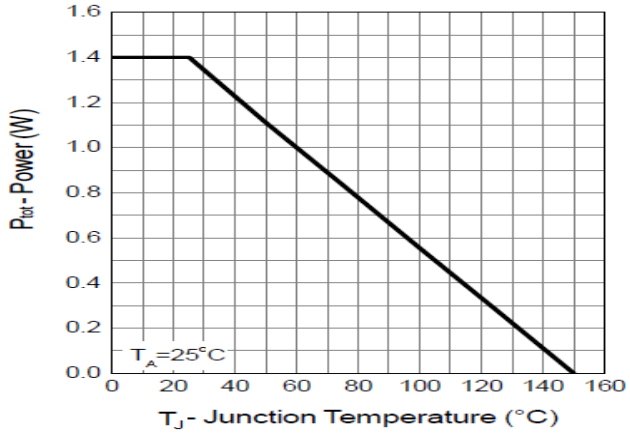


12. Gate Charge

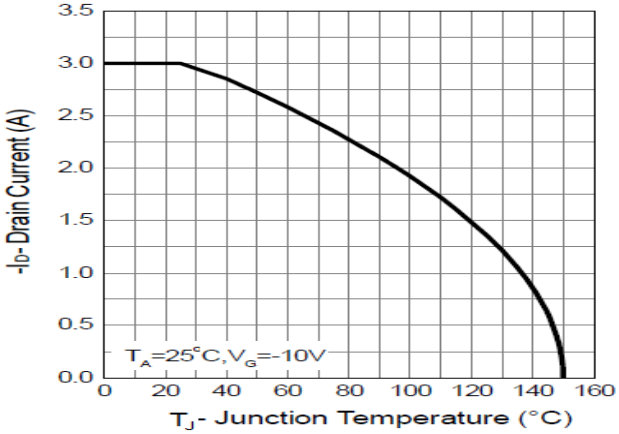


P CHANNEL TYPICAL CHARACTERISTICS

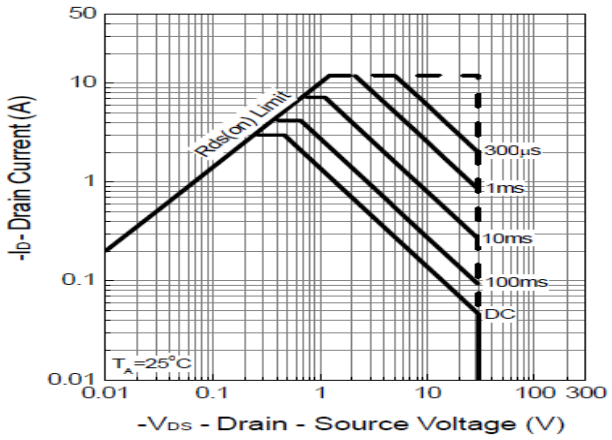
1. Power Dissipation



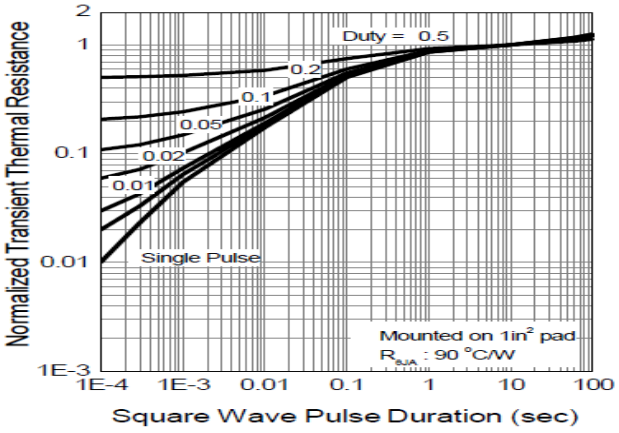
2. Drain Current



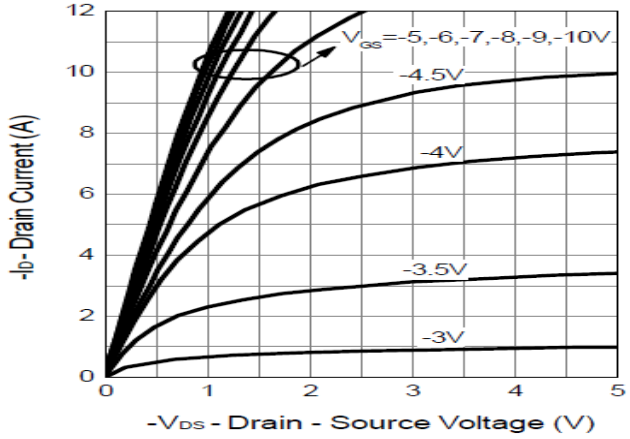
3. Safe Operation Area



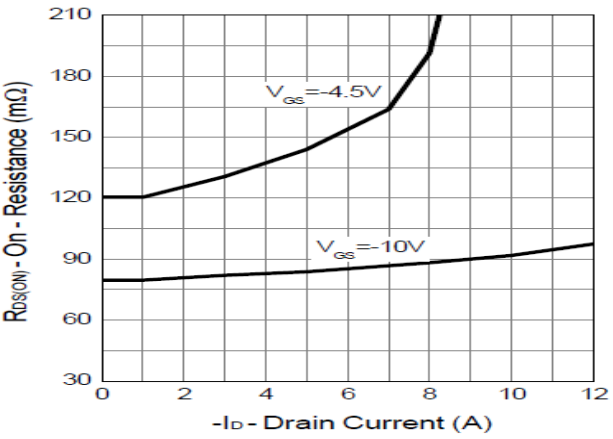
4. Thermal Transient Impedance



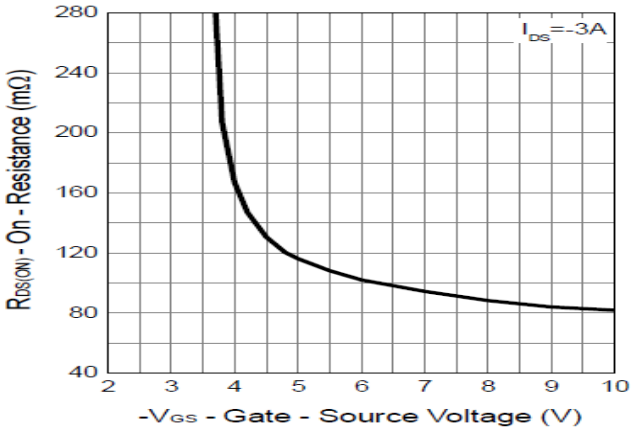
5. Output Characteristics



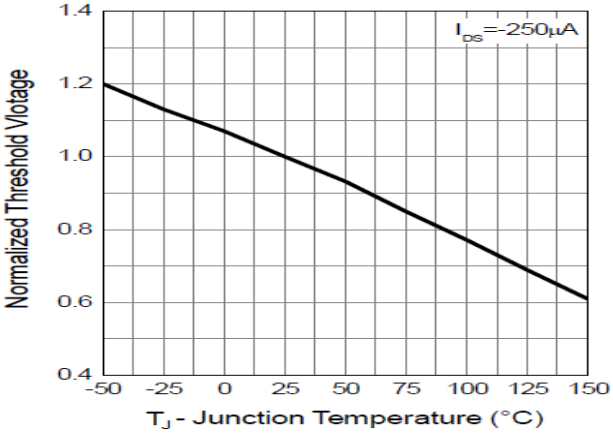
6. Drain-Source On Resistance



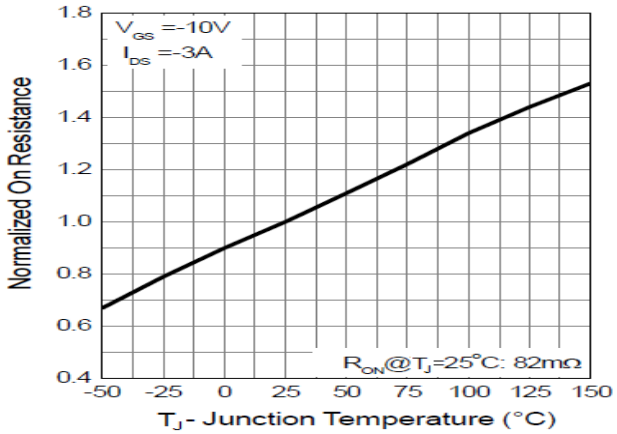
7. Gate-Source On Resistance



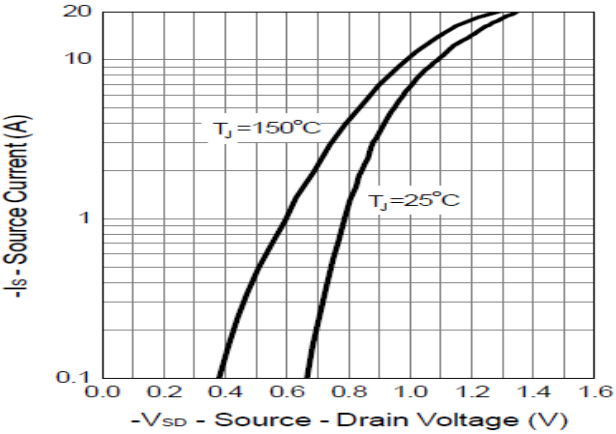
8. Gate Threshold Voltage



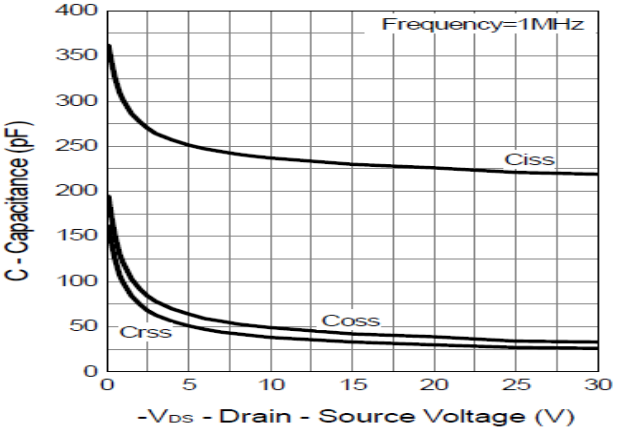
9. Drain-Source On Resistance



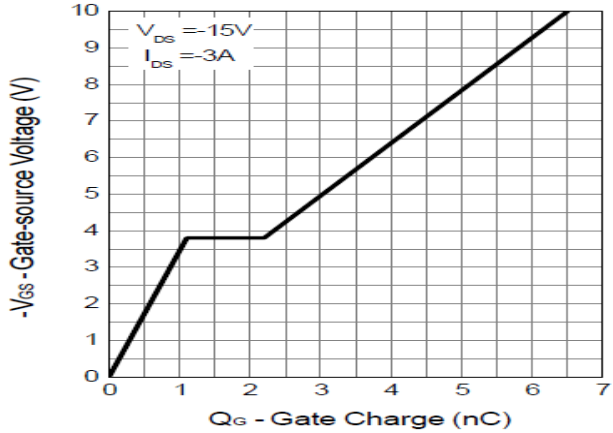
10. Source-Drain Diode Forward



11. Capacitance



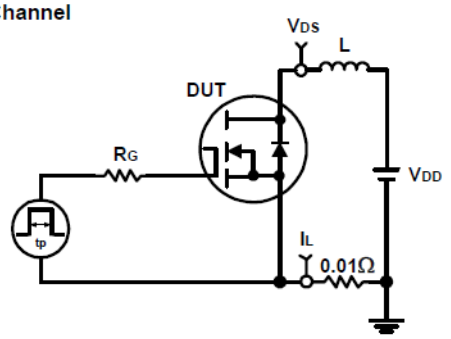
12. Gate Charge

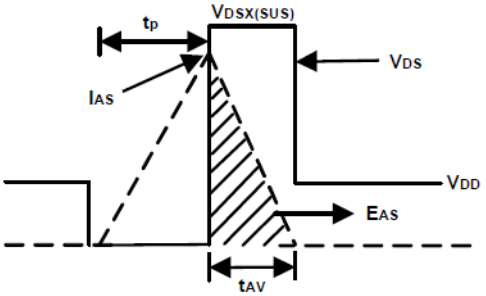


DETAILED INFORMATION

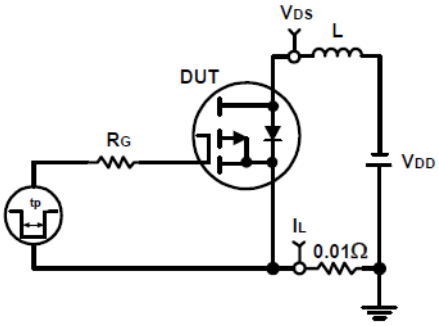
Avalanche Test Circuit and Waveforms

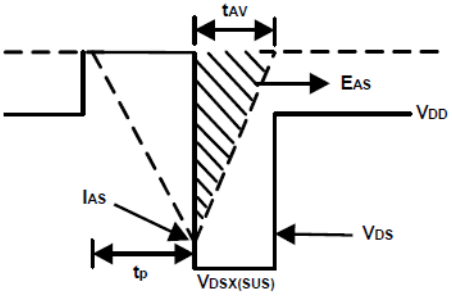
N Channel





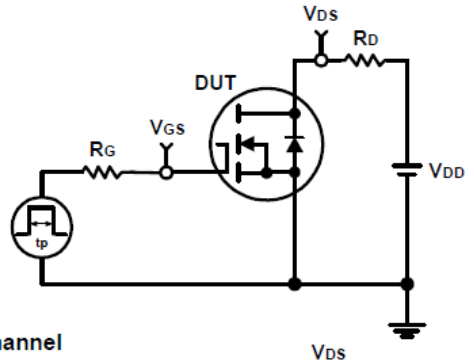
P Channel

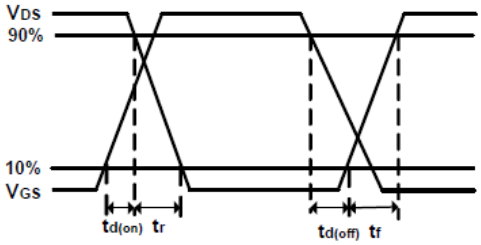




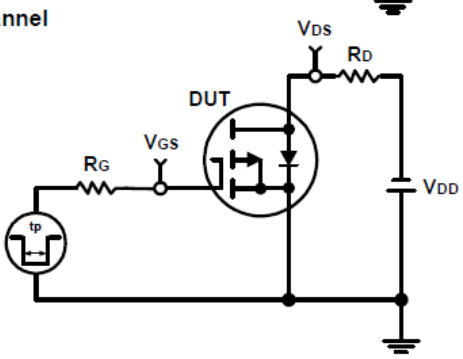
Switching Time Test Circuit and Waveforms

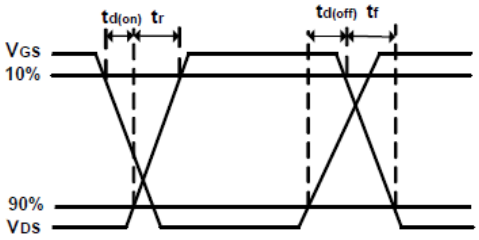
N Channel





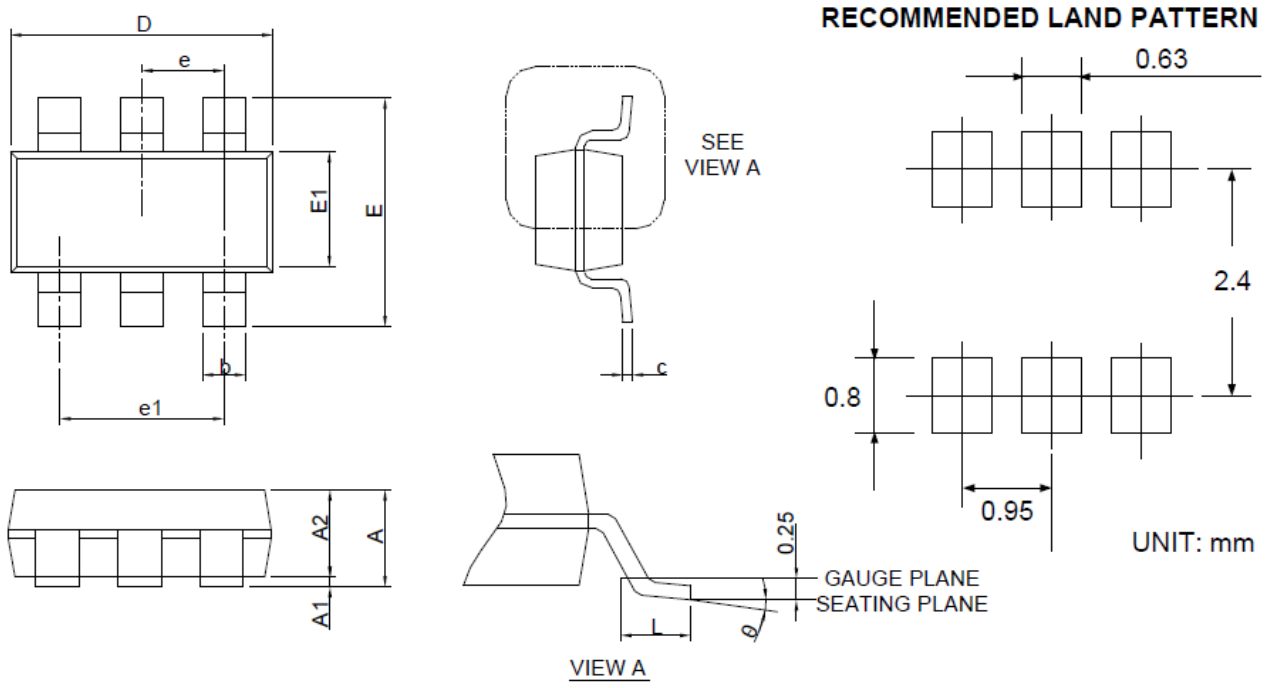
P Channel





PACKAGE INFORMATION

Dimension in SOT-26 Package (Unit: mm)



SYMBOL	MIN	MAX
A	-	1.250
A1	0.000	0.150
A2	0.900	1.300
b	0.300	0.500
c	0.080	0.220
D	2.700	3.100
E	2.600	3.000
E1	1.400	1.800
e	0.950(BSC)	
e1	1.900(BSC)	
L	0.300	0.600
θ	0°	8°

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