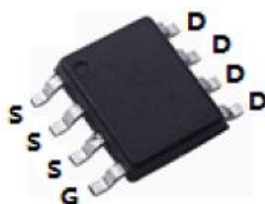
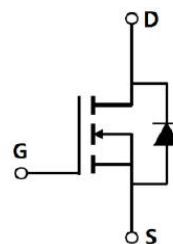


## Main Product Characteristics

$V_{DSS}$	100V
$R_{DS(on)}$	17m $\Omega$ (typ.)
$I_D$	8A ①



SOP-8



Schematic Diagram

## Features and Benefits

- Low  $R_{DS(on)}$  & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and reverse body recovery
- 150°C operating temperature



## Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor

## Description

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

## Absolute Max Rating

Symbol	Parameter	Max.	Units
$I_D$ @ TC = 25°C	Continuous Drain Current, $V_{GS}$ @ 10V ①	8	A
$I_{DM}$	Pulsed Drain Current ②	32	
$P_D$ @TC = 25°C	Power Dissipation ③	3.5	W
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulse Avalanche Energy @ L=0.5mH	42	mJ
$I_{AS}$	Avalanche Current @ L=0.5mH	13	A
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

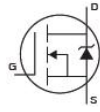
## Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient ( $t \leq 10s$ ) ④	—	35.7	°C/W

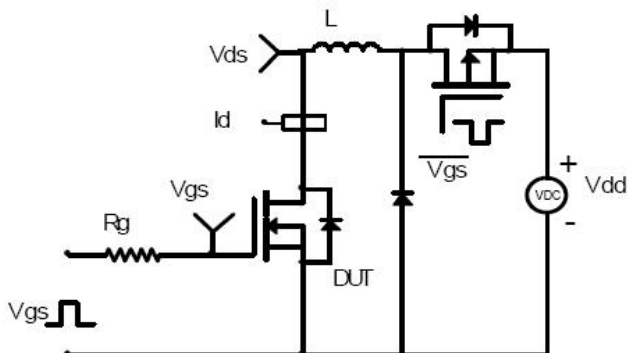
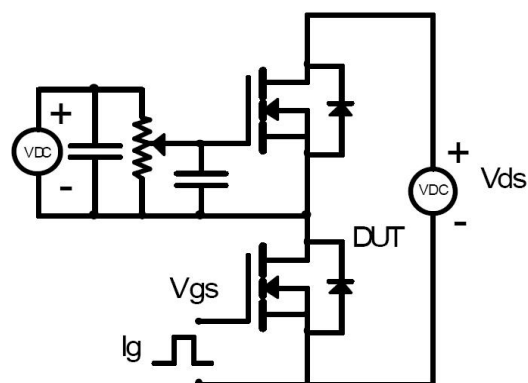
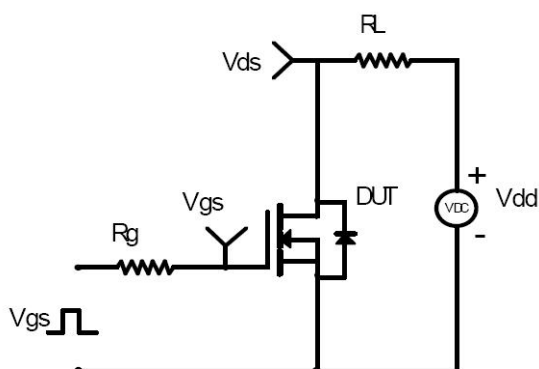
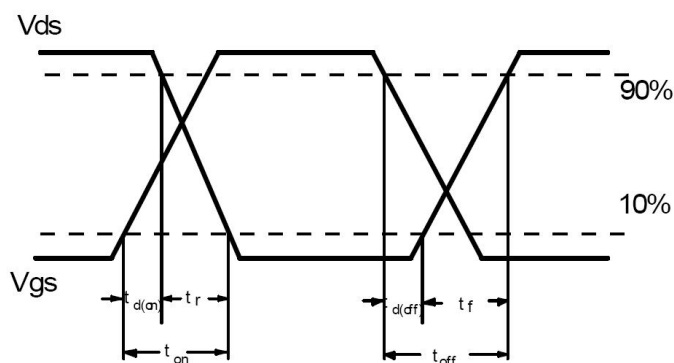
## Electrical Characterizes @ $T_A=25^\circ C$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	16	20	m $\Omega$	$V_{GS}=10V, I_D=10A$
		—	—	26		$V_{GS}=4.5V, I_D=7A$
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS} = 100V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
$Q_g$	Total gate charge	—	19	—	nC	$I_D = 5A,$ $V_{DS}=50V,$ $V_{GS} = 10V$
$Q_{gs}$	Gate-to-Source charge	—	2.5	—		
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	5	—		
$t_{d(on)}$	Turn-on delay time	—	8.1	—	ns	$V_{GS}=10V, V_{DD} = 50V,$ $R_{GEN}=3\Omega$ $I_D = 10A$
$t_r$	Rise time	—	11.7	—		
$t_{d(off)}$	Turn-Off delay time	—	23.3	—		
$t_f$	Fall time	—	5.7	—		
$C_{iss}$	Input capacitance	—	927	—	pF	$V_{GS} = 0V$ $V_{DS} = 50V$ $f = 1MHz$
$C_{oss}$	Output capacitance	—	108	—		
$C_{riss}$	Reverse transfer capacitance	—	2.5	—		

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode) ①	—	—	8	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	32	A	
$V_{SD}$	Diode Forward Voltage	—	—	1.3	V	$I_S=20A, V_{GS}=0V, T_J = 25^\circ C$
$t_{rr}$	Reverse Recovery Time	—	50	—	ns	$T_J = 25^\circ C, I_F = 5A, di/dt =$
$Q_{rr}$	Reverse Recovery Charge	—	65	—	nC	100A/ $\mu s$

## Test Circuits and Waveforms

**EAS Test Circuit:**

**Gate Charge Test Circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


### Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$

## Typical Electrical and Thermal Characteristics

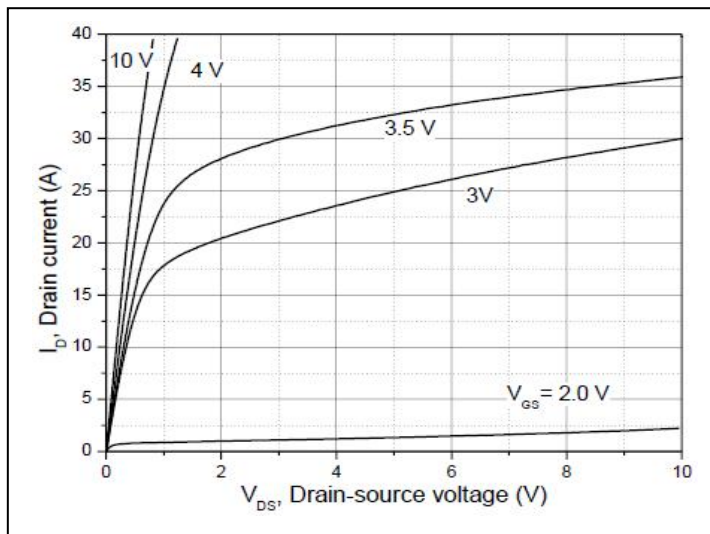


Figure 1. Typical Output Characteristics

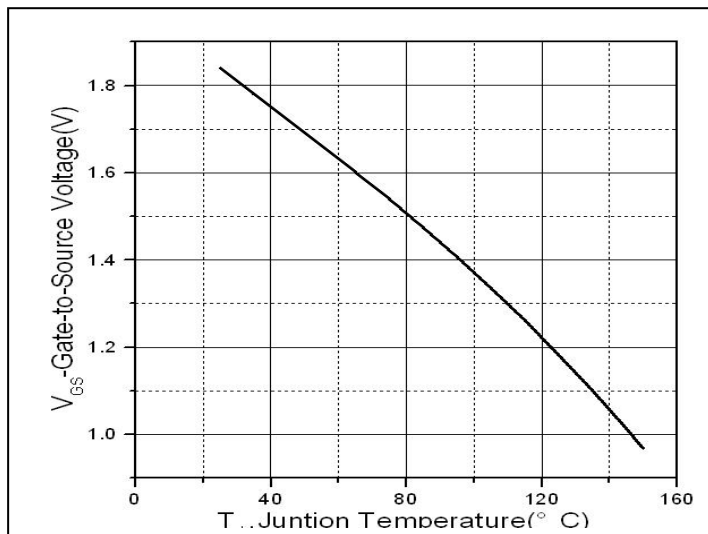


Figure 2. Gate to Source Cut-off Voltage

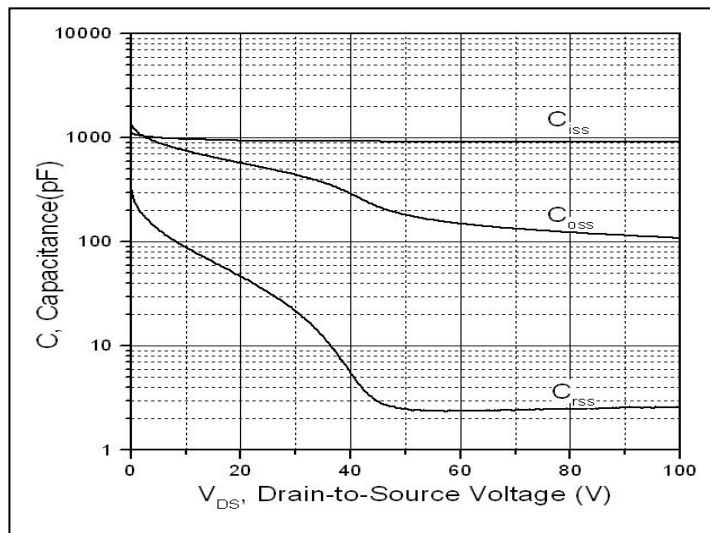


Figure 3. Typical Capacitances

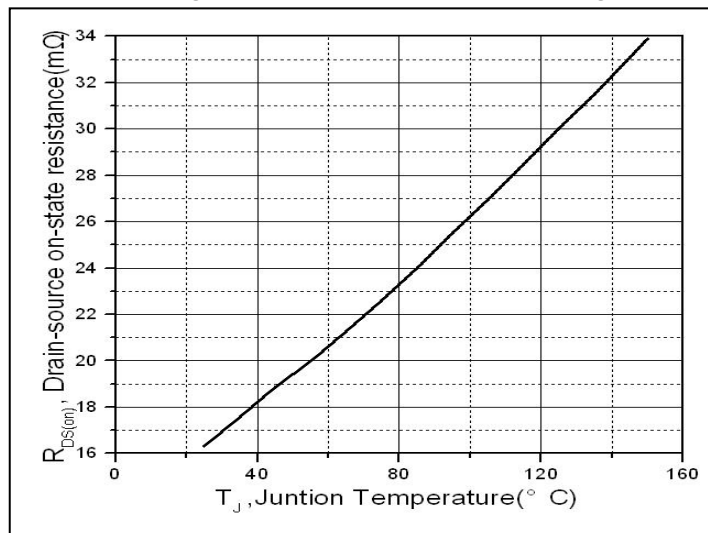


Figure 4. Drain-to-Source On-state Resistance

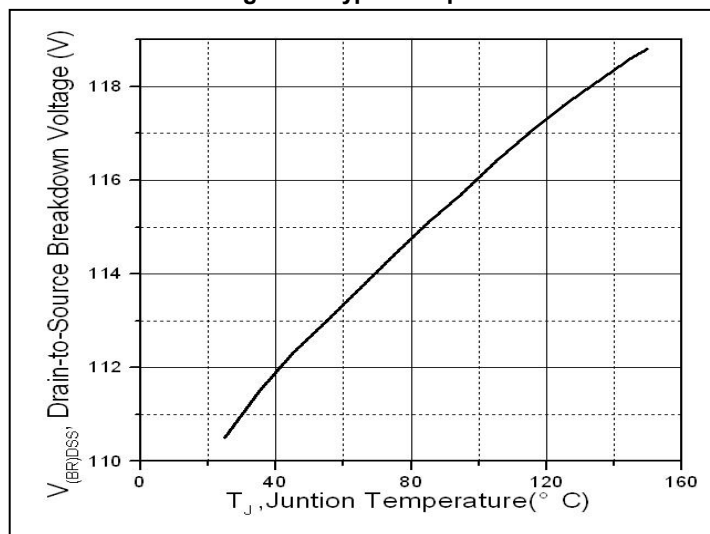


Figure 5. Drain-to-Source Breakdown Voltage

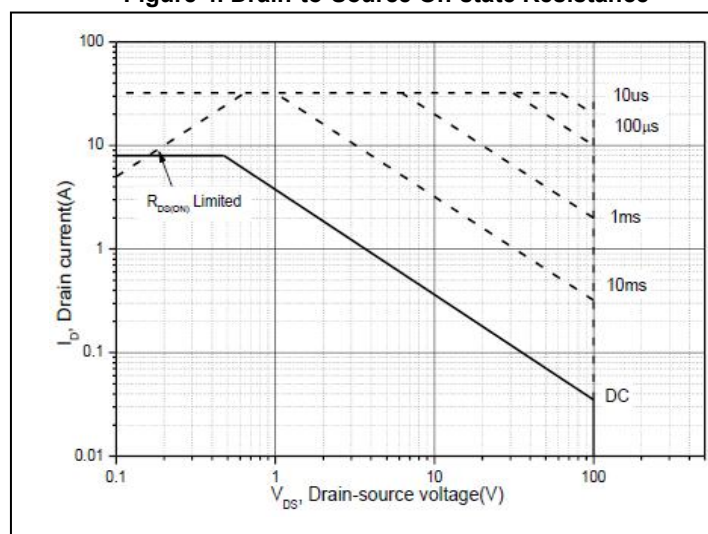
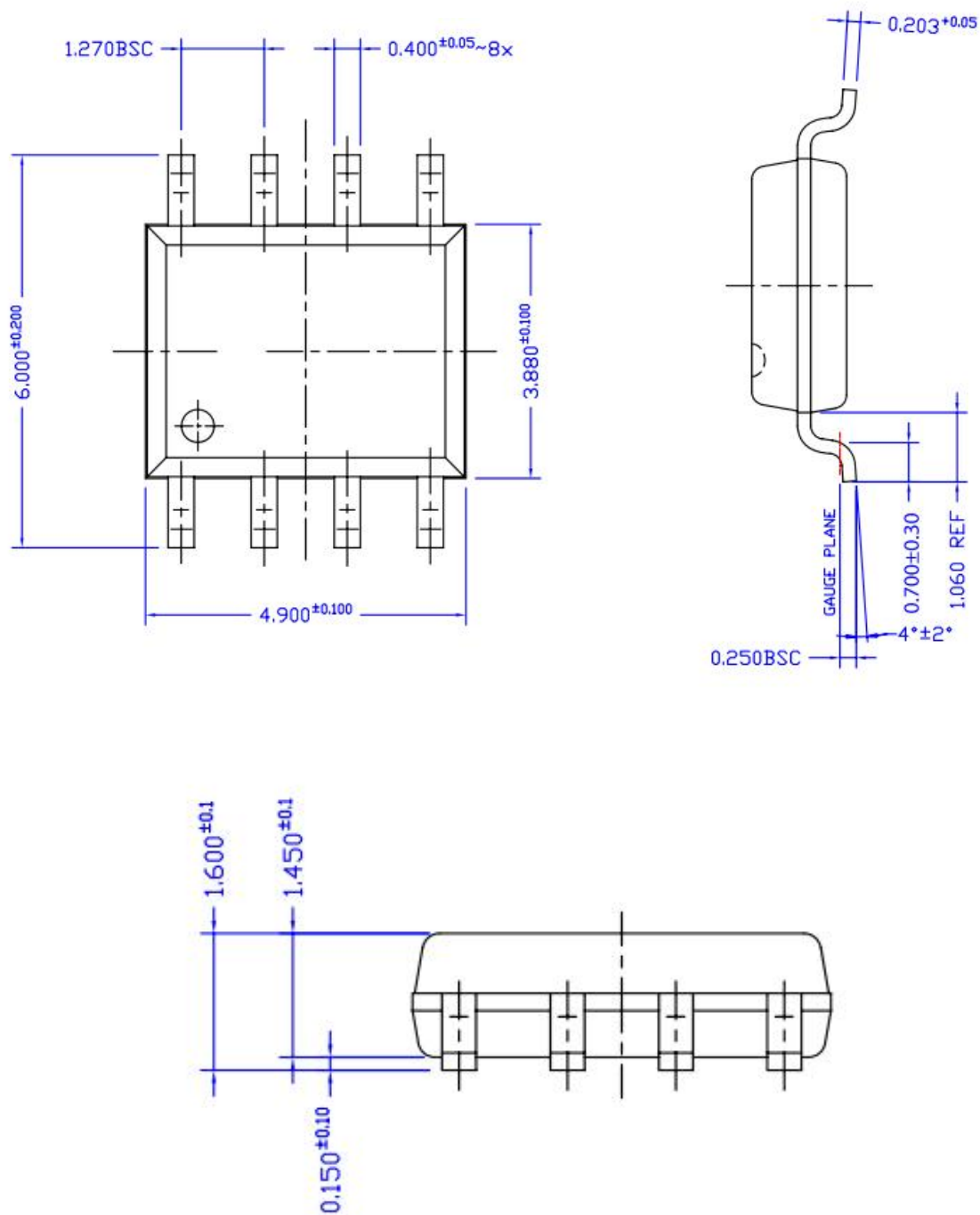


Figure 6. Safe Operation Area(Tc=25°C)

Mechanical Data:



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