

## General Description

The MY4459 is the single P-Channel logic enhancement mode power field effect transistors to provide excellent RDS(on), low gate charge and low gate resistance. It's up to -30V operation voltage is well suited in switching mode power supply, SMPS, notebook computer power management

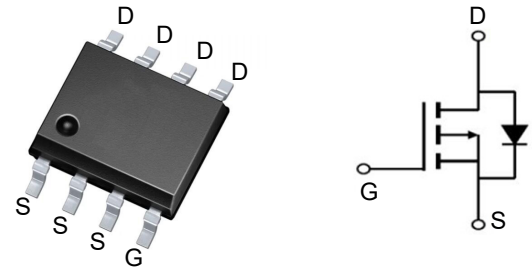


## Features

$V_{DSS}$	-30	V
$I_D$	-5.1	A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	43	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	62	$m\Omega$

## Application

- Switching power supply, SMPS
- Battery Powered System
- DC/DC Converter
- DC/AC Converter



## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4459	SOP-8	4459	3000

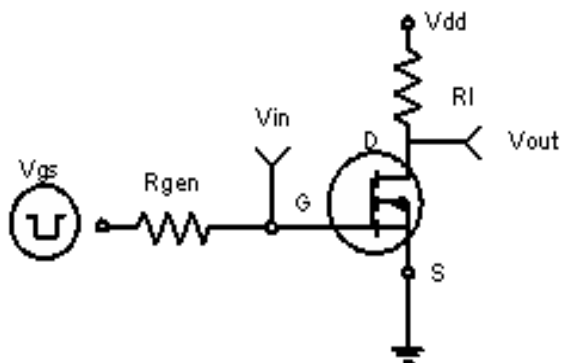
## Absolute Maximum Ratings ( $T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	-5.1	A
Drain Current-Pulsed (Note 1)	$I_{DM}$	-20	A
Maximum Power Dissipation	$P_D$	2.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^{\circ}C$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	50	$^{\circ}C/W$

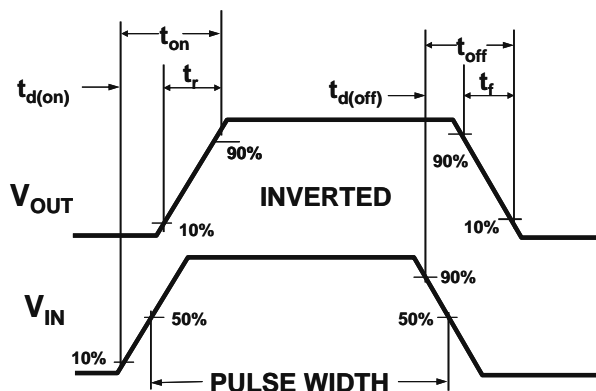
Electrical Characteristics ( $T_A=25\text{ }^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.8	-1.2	-2.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5.1A$	-	43	55	$m\Omega$
		$V_{GS}=-4.5V, I_D=-4.2A$	-	62	90	$m\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-4.5A$	4	7	-	S
<b>Dynamic Characteristics (Note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0MHz$	-	520	-	PF
Output Capacitance	$C_{oss}$		-	130	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	70	-	PF
<b>Switching Characteristics (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1A,$ $V_{GS}=-10V, R_{GEN}=6\Omega$	-	7	-	nS
Turn-on Rise Time	$t_r$		-	13	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	nS
Turn-Off Fall Time	$t_f$		-	9	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-5.1A, V_{GS}=-10V$	-	11	-	nC
Gate-Source Charge	$Q_{gs}$		-	2.2	-	nC
Gate-Drain Charge	$Q_{gd}$		-	3	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=-5.1A$	-	-	-1.2	V

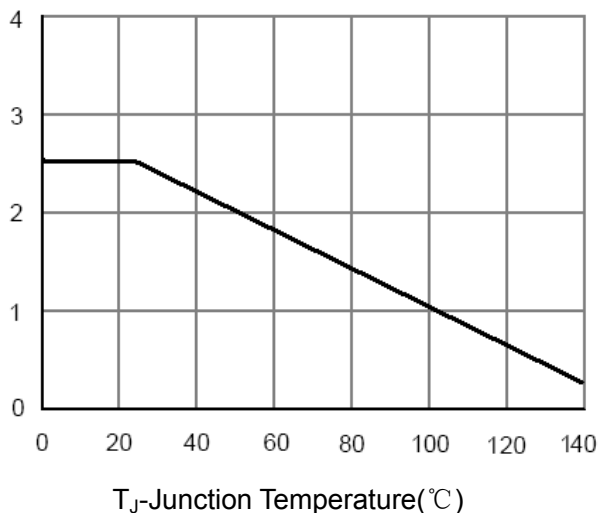
**Typical Electrical and Thermal Characteristics**



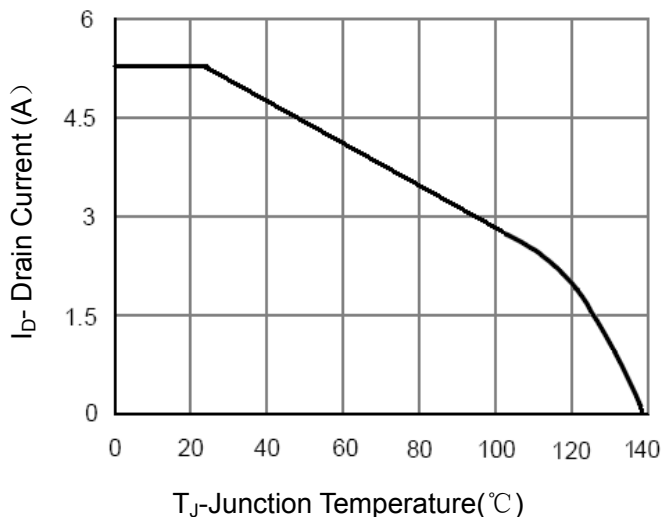
**Figure 1: Switching Test Circuit**



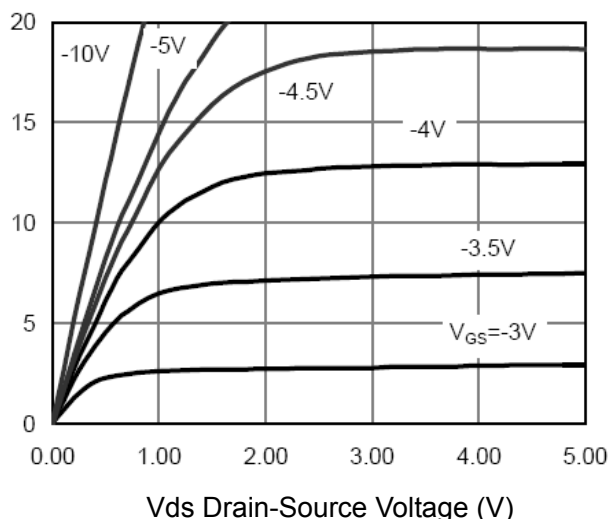
**Figure 2: Switching Waveforms**



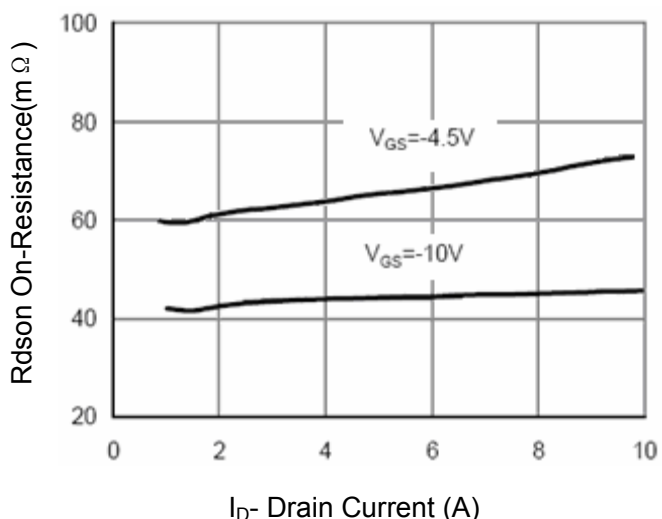
**Figure 3 Power Dissipation**



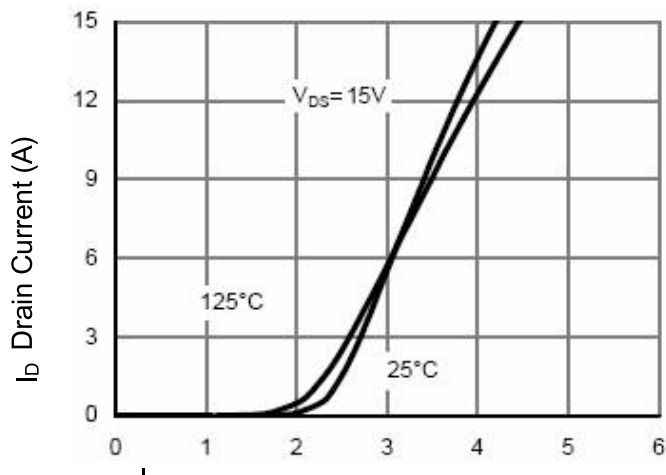
**Figure 4 Drain Current**



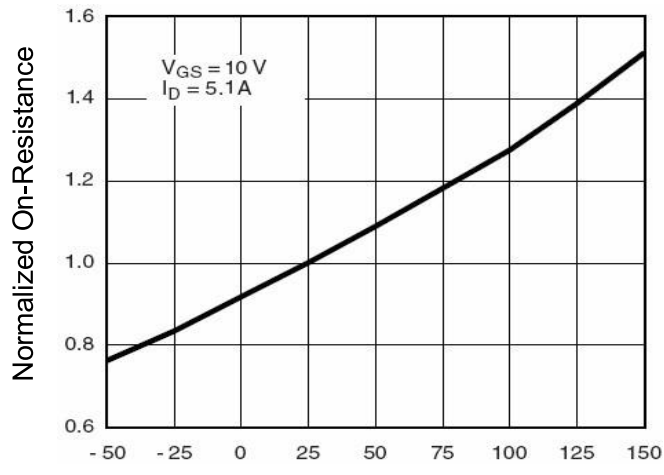
**Figure 5 Output Characteristics**



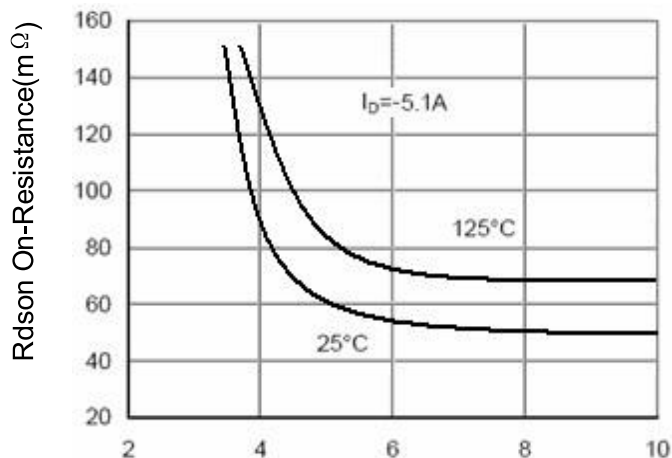
**Figure 6 Drain-Source On-Resistance**



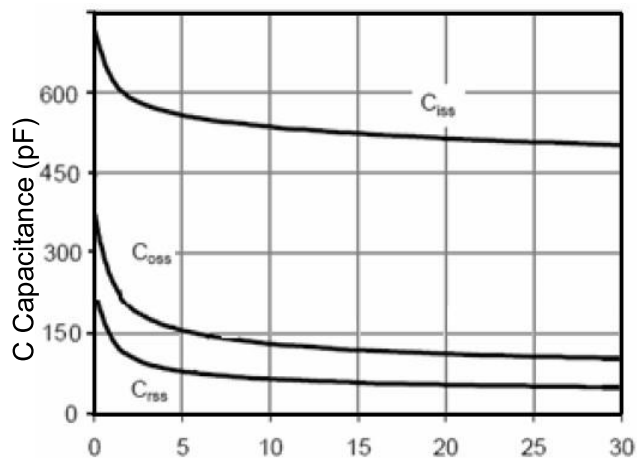
Vgs Gate-Source Voltage (V)  
**Figure 7 Transfer Characteristics**



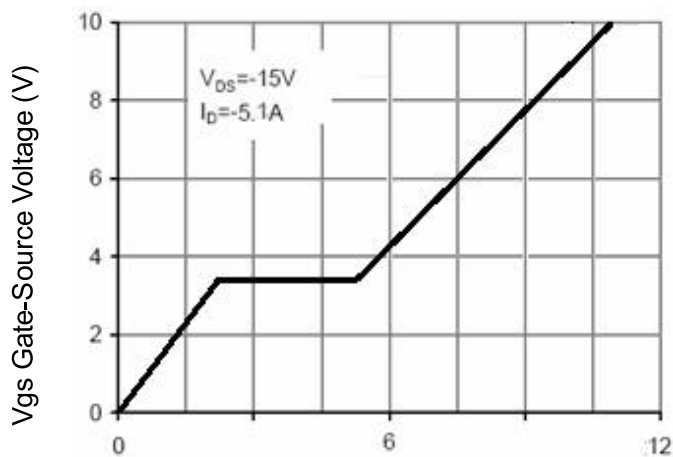
T<sub>J</sub>-Junction Temperature(°C)  
**Figure 8 Drain-Source On-Resistance**



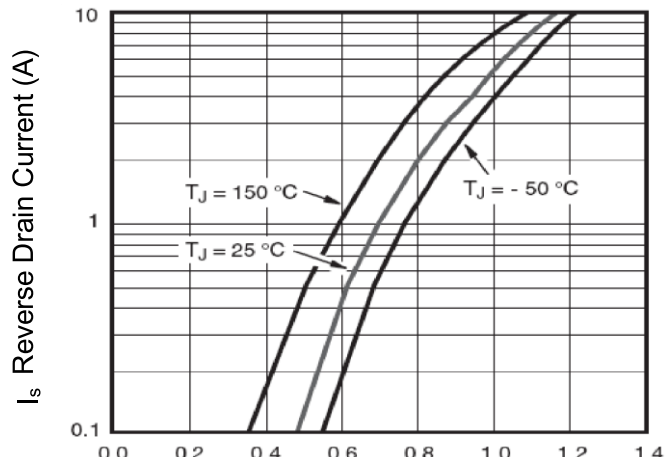
Vgs Gate-Source Voltage (V)  
**Figure 9 Rdson vs Vgs**



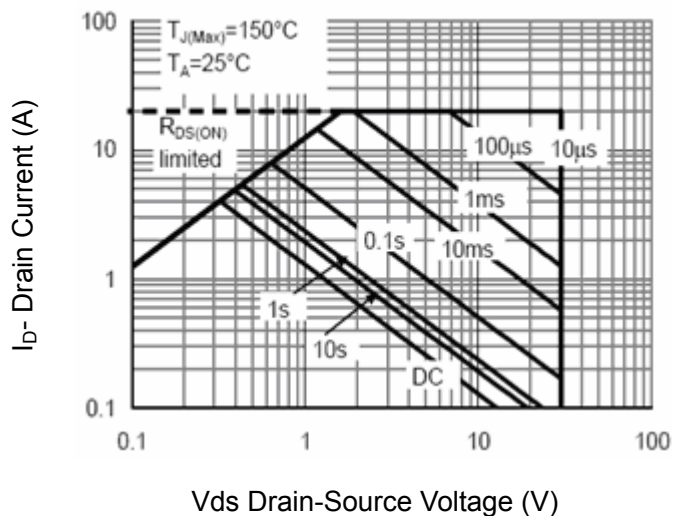
Vds Drain-Source Voltage (V)  
**Figure 10 Capacitance vs Vds**



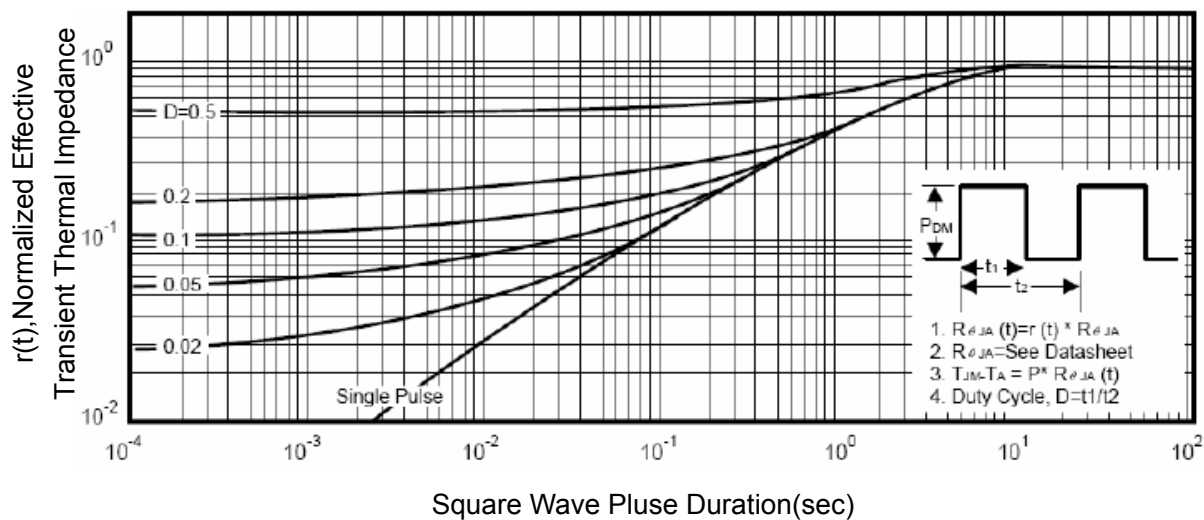
Qg Gate Charge (nC)  
**Figure 11 Gate Charge**



Vsd Source-Drain Voltage (V)  
**Figure 12 Source- Drain Diode Forward**

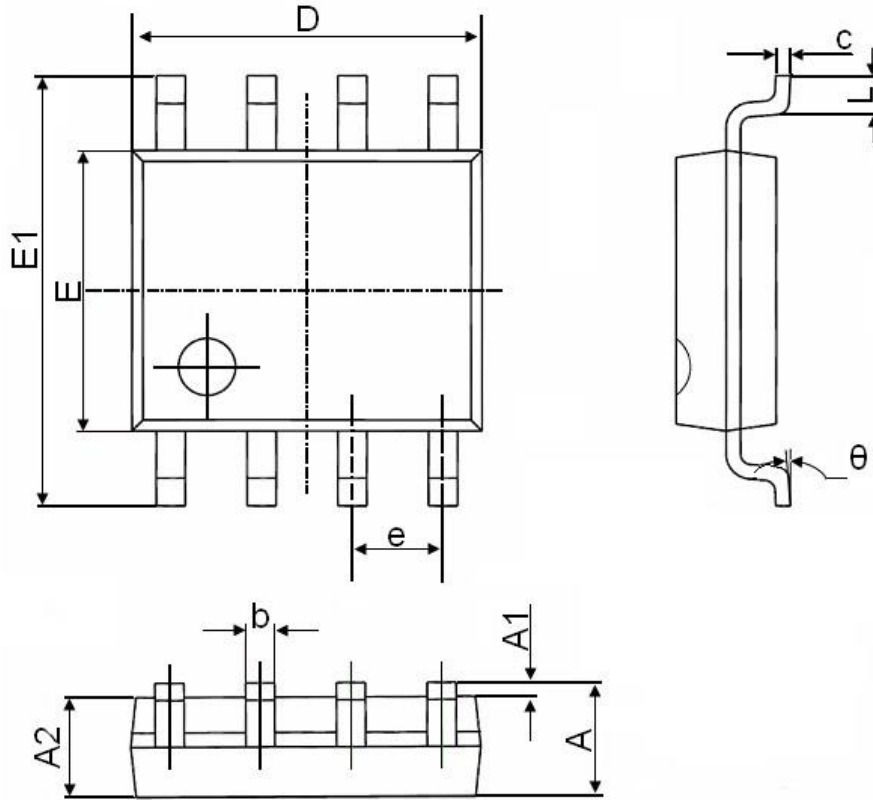


**Figure 13 Safe Operation Area**



**Figure 14 Normalized Maximum Transient Thermal Impedance**

**Package Mechanical Data-SOP-8**



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