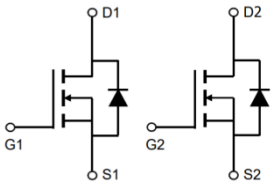
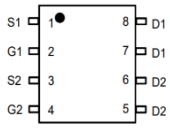
AP4892
100V Dual N-Channel Enhancement Mode MOSFET

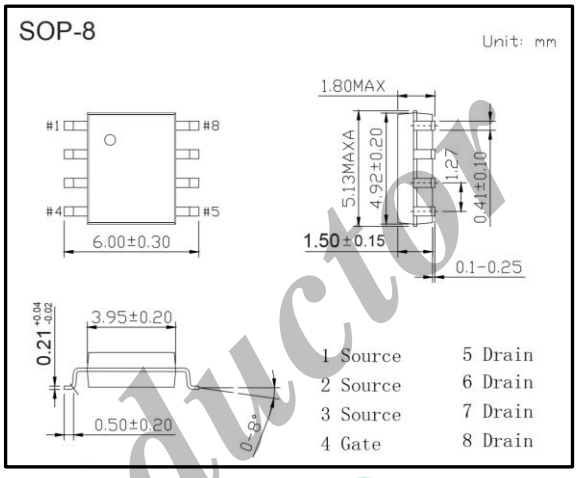
- **General Description**

AP4892 uses advanced MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of RDS(ON), Ciss and Coss.



Top View





Pb-Free

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- **Applications**

The device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

- **Product Summary**

V_{DS}	100V
I_D (at V_{GS} = 10V)	4A
$R_{DS(ON)}$ (at V_{GS} = 10V)	< 68mΩ
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	< 94mΩ

- **Absolute Maximum Ratings Ta = 25°C**

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Ta = 25°C	I_D	4	A
	Ta = 70°C		3	
Pulsed Drain Current		I_{DM}	25	
Avalanche Current		I_{AS}	4	A
Avalanche Energy L=0.1mH		E_{AS}	0.8	mJ
Power Dissipation	Ta = 25°C	P_D	2.0	W
	Ta = 70°C		1.3	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Characteristics				
Thermal Resistance. Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	62.5	°C/W
	Steady State		90	
Thermal Resistance. Junction-to-Lead	Steady State	$R_{\theta JL}$	40	

- **Electrical Characteristics Ta = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	μA
		V_{DS}=100V, V_{GS}=0V, T_J=55°C			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.7	2.35	2.8	V
On-State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	25			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=4A		56	68	mΩ
		V_{GS}=10V, I_D=18A, T_J=125°C		104	126	
		V_{GS}=4.5V, I_D=3A		74	94	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=4A		12.5		S
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.78	1	V
Maximum Body-Diode Continuous Current	I_S				2.5	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz		415		pF
Output Capacitance	C_{oss}			32		
Reverse Transfer Capacitance	C_{rss}			3		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.7	1.4	2.1	Ω
Switching Parameters						
Total Gate Charge	Q_g(10V)	V_{GS}=10V, V_{DS}=50V, I_D=4A		6.5	12	nC
	Q_g(4.5V)			3	6	
Gate Source Charge	Q_{gs}			1.5		
Gate Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=50V, R_L=12.5Ω, R_{GEN}=3Ω		4		ns
Turn-On Rise Time	t_r			2		
Turn-Off Delay Time	$t_{D(off)}$			15		
Turn-Off Fall Time	t_f			2		
Body Diode Reverse Recovery Time	t_{rr}	I_F=4A, d_i/d_t=500A/μs		16		
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=4A, d_i/d_t=500A/μs		44		nC

- **Ordering Information**

Ordering Part Number	Package	MOQ
AP4892	SOP-8	2,500 pcs / reel

- **Typical Electrical and Thermal Characteristics**

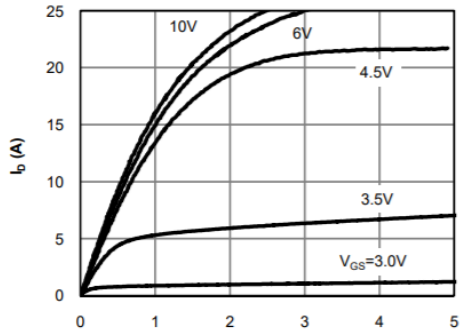

Fig 1: On-Region Characteristics

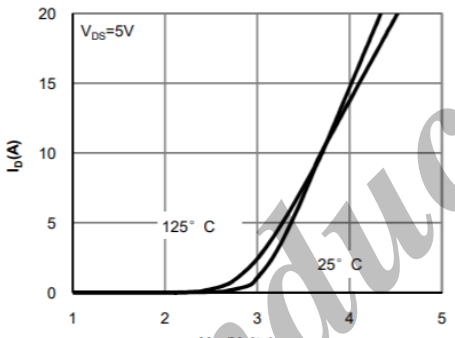

Figure 2: Transfer Characteristics

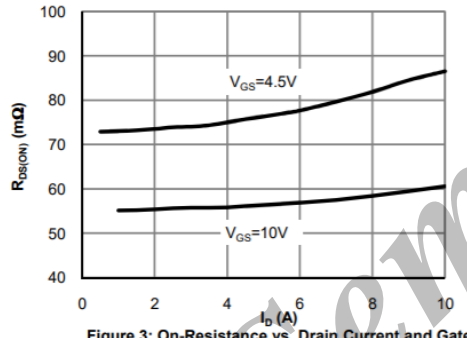

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

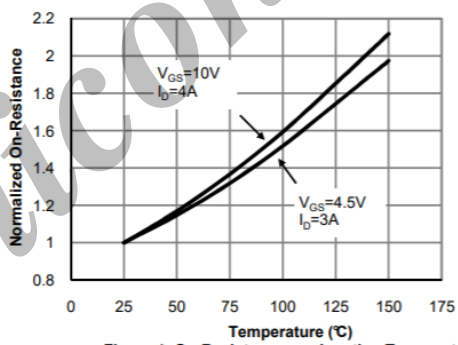

Figure 4: On-Resistance vs. Junction Temperature

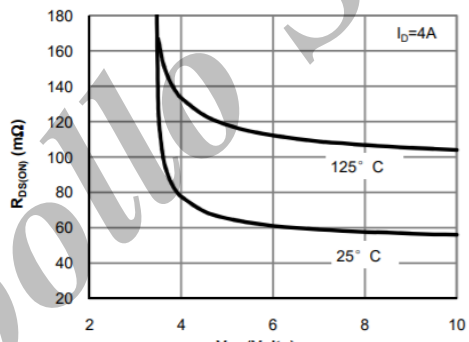

Figure 5: On-Resistance vs. Gate-Source Voltage

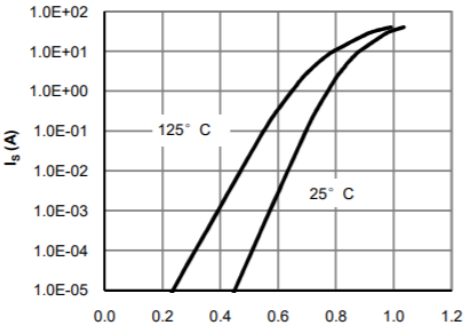

Figure 6: Body-Diode Characteristics

Note 1: The static characteristics in Figure 1 to 6 are obtained using <300μA pulses, duty cycle 0.5% max.

- **Typical Electrical and Thermal Characteristics**

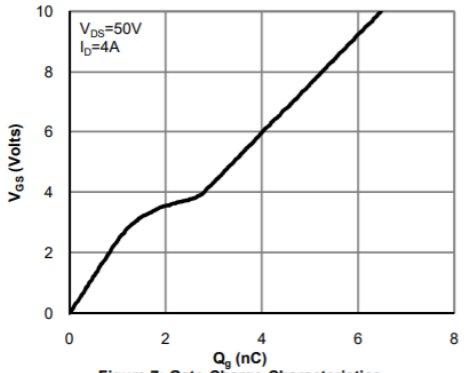

Figure 7: Gate-Charge Characteristics

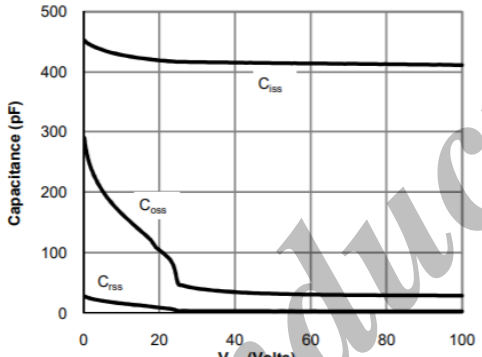

Figure 8: Capacitance Characteristics

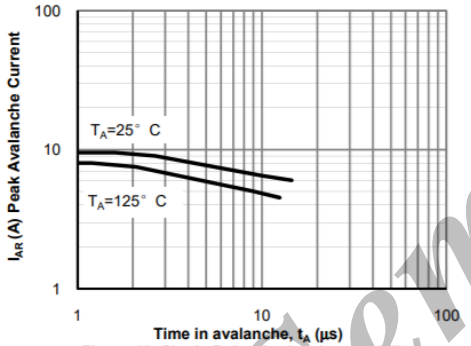

Figure 12: Single Pulse Avalanche capability

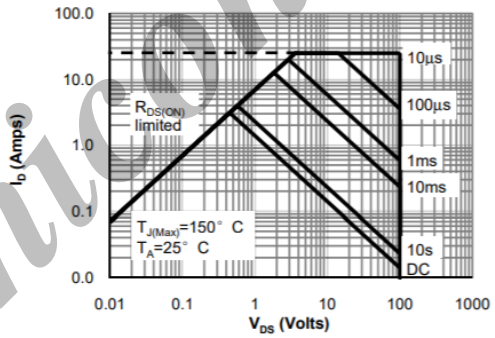

Figure 10: Maximum Forward Biased Safe Operating Area

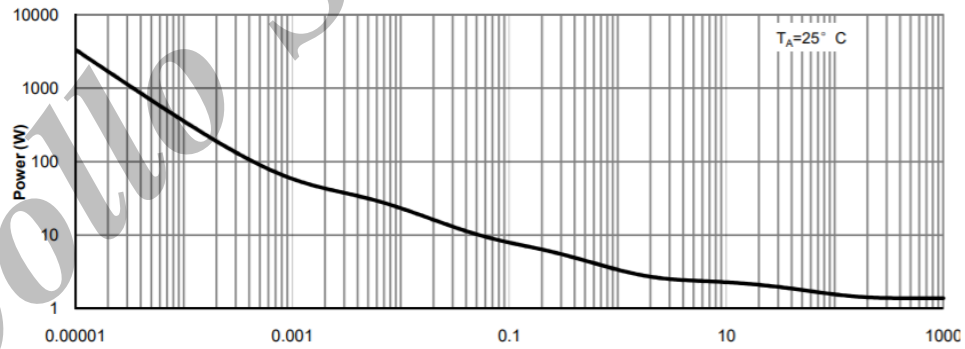

Figure 11: Single Pulse Power Rating Junction-to-Ambient

- **Typical Electrical and Thermal Characteristics**

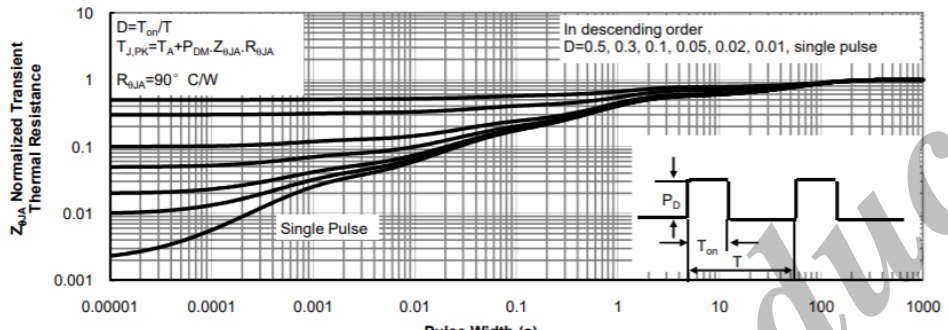

Figure 12: Normalized Maximum Transient Thermal Impedance

Note 2: The curves in Figure 10 to 12 are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in² FR-4 board with 2oz. copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C . The SOA curve provides a single pulse rating.

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