

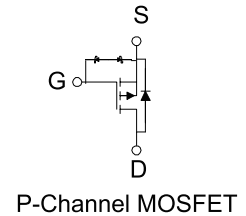
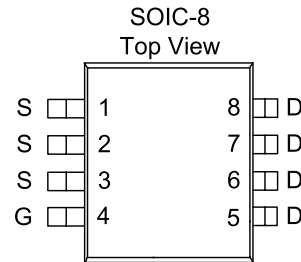
P-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOIC-8 saves board space
- Fast switching speed
- High performance trench technology

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-30	19 @ $V_{GS} = -10V$	-9.5
	30 @ $V_{GS} = -4.5V$	-7.5



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 25	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	-9.5	A
	$T_A = 70^\circ\text{C}$		-8.3	
Pulsed Drain Current ^b		I_{DM}	± 50	
Continuous Source Current (Diode Conduction) ^a		I_S	-2.1	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	3.1	W
	$T_A = 70^\circ\text{C}$		2.6	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Case ^a	$t \leq 5 \text{ sec}$	$R_{\theta JC}$	25	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^a	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	50	$^\circ\text{C/W}$

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	-30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-1	-1.6	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 4.5\text{ V}$			± 200	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			-5	
On-State Drain Current ^A	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$	-50			A
Drain-Source On-Resistance ^A	$r_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -9.5\text{ A}$		16	19	m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -7.5\text{ A}$		26	30	
		$V_{GS} = -10\text{ V}, I_D = -9.5\text{ A}, T_J = 55^\circ\text{C}$		20	29	
Forward Transconductance ^A	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -9.5\text{ A}$		31		S
Diode Forward Voltage	V_{SD}	$I_S = -2.1\text{ A}, V_{GS} = 0\text{ V}$		-0.7	-1.2	V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = -15\text{ V}, V_{GS} = -4.5\text{ V},$ $I_D = -9.5\text{ A}$		12.8	20	nC
Gate-Source Charge	Q_{gs}			4.5		
Gate-Drain Charge	Q_{gd}			5		
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 15\text{ }\Omega, I_D = -1\text{ A},$ $V_{GEN} = -10\text{ V}, R_G = 6\text{ }\Omega$		15	26	nS
Rise Time	t_r			12	21	
Turn-Off Delay Time	$t_{d(off)}$			62	108	
Fall-Time	t_f			46	71	

Notes

- Pulse test: $PW \leq 300\text{us}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

Typical Electrical Characteristics (P-Channel)

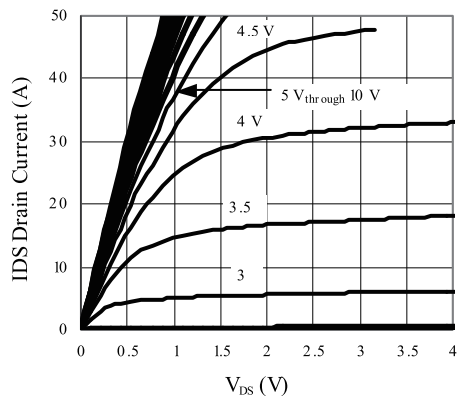


Figure 1. On-Region Characteristics

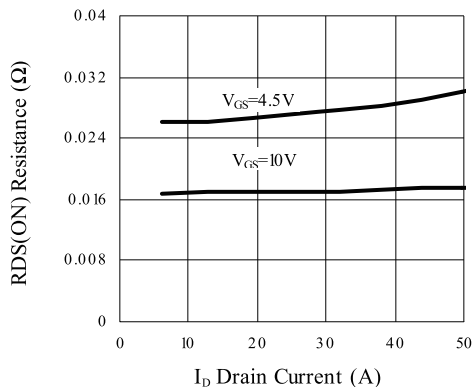


Figure 2. On-Resistance with Drain Current

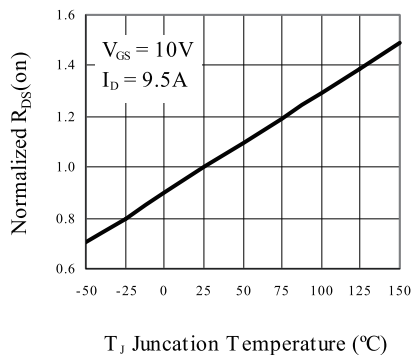


Figure 3. On-Resistance Variation with Temperature

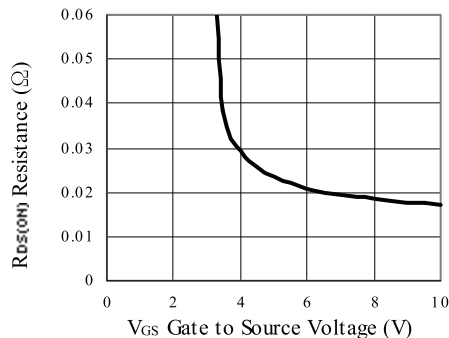


Figure 4. On-Resistance Variation with Gate to Source Voltage

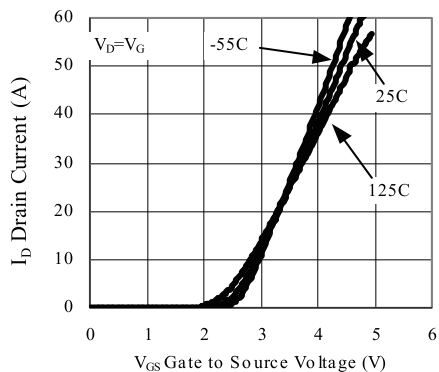


Figure 5. Transfer Characteristics

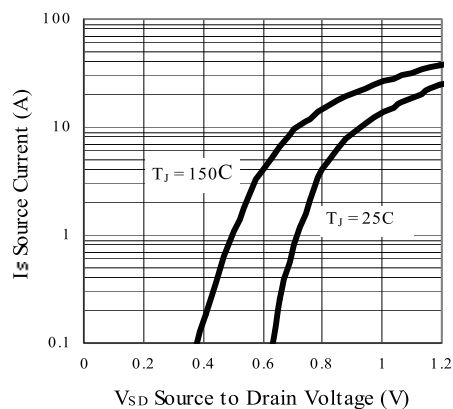


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics (P-Channel)

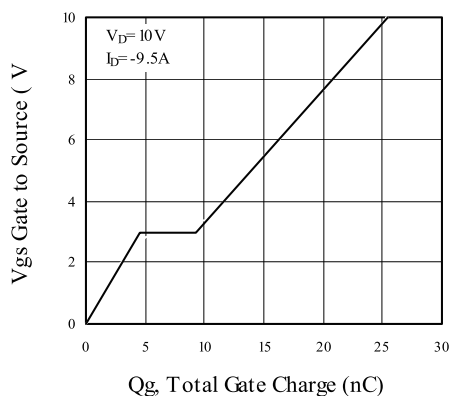


Figure 7. Gate Charge Characteristics

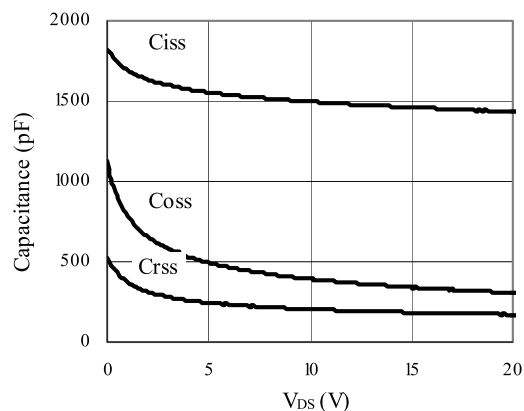


Figure 8. Capacitance Characteristics

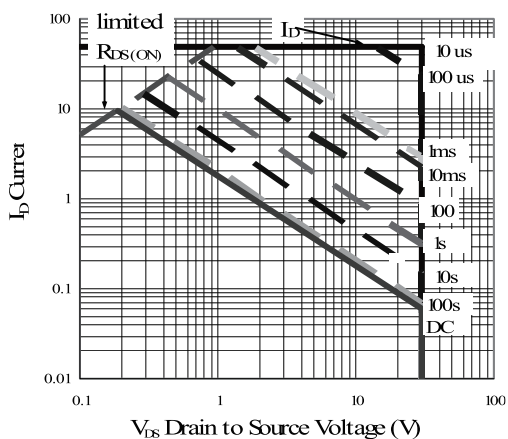


Figure 9. Maximum Safe Operating Area

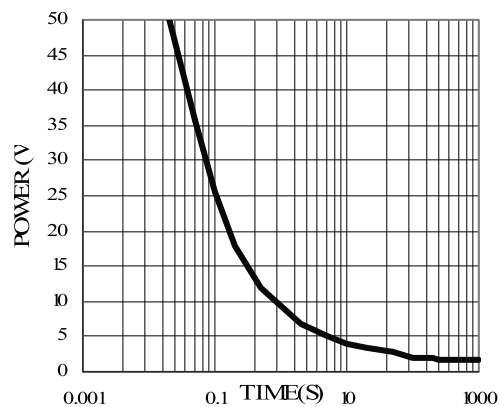


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

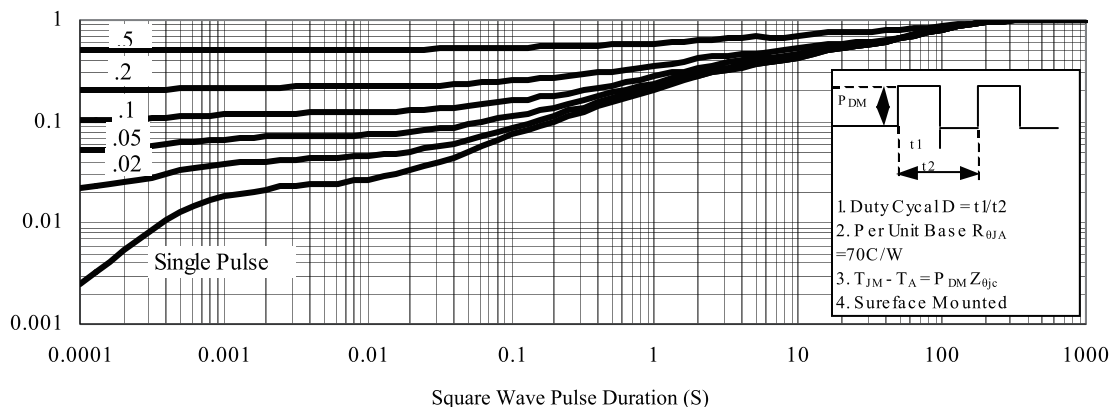
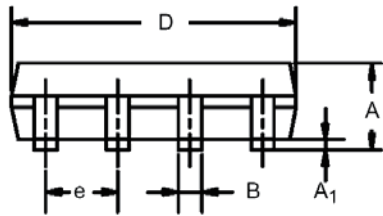
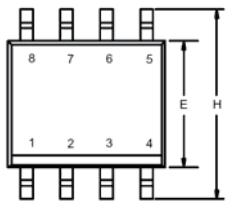


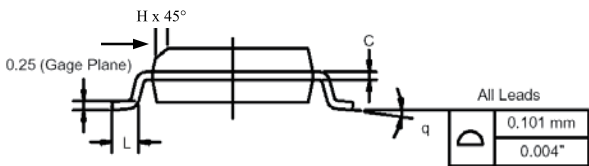
Figure 11. Transient Thermal Response Curve

Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°



Ordering information

- AM4835EP-T1-XX
 - A: Analog Power
 - M: MOSFET
 - 4835: Part number
 - E: ESD Protected
 - P: P-Channel
 - T1: Tape & reel
 - XX: Blank: Standard
PF: Leadfree