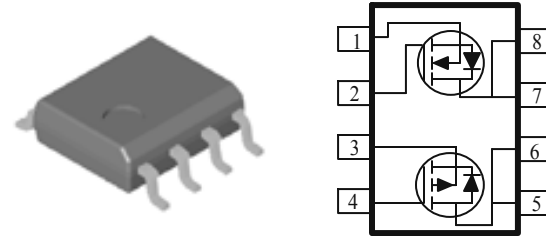


P & N-Channel 30-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature SO-8 Surface Mount Package Saves Board Space
- High power and current handling capability
- Low side high current DC-DC Converter applications

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
30	40 @ $V_{GS} = 4.5V$	6.0
	31 @ $V_{GS} = 10V$	6.9
-30	80 @ $V_{GS} = -4.5V$	-4.2
	52 @ $V_{GS} = -10V$	-5.2



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage		V _{DS}	30	-30	V
Gate-Source Voltage		V _{GS}	±20	±20	
Continuous Drain Current ^a	T _A =25°C	I _D	6.9	-5.2	A
	T _A =70°C		5.4	-6.8	
Pulsed Drain Current ^b		I _{DM}	20	-20	
Continuous Source Current (Diode Conduction) ^a		I _S	1.3	-1.3	A
Power Dissipation ^a	T _A =25°C	P _D	2.1	2.1	W
	T _A =70°C		1.3	1.3	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Case ^a	$t \leq 5 \text{ sec}$	$R_{\theta JC}$	40	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^a	$t \leq 5 \text{ sec}$	$R_{\theta JA}$	60	$^\circ\text{C/W}$

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	
			Ch	Min	Typ	Max		
Static								
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250 \text{ uA}$	N	1			V	
		$V_{GS} = V_{DS}, I_D = -250 \text{ uA}$	P	-1.0				
Gate-Body Leakage	I_{GSS}	$V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$	P			± 100	nA	
		$V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}$	N			± 100		
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$	P			-1	uA	
		$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$	N			1		
On-State Drain Current ^A	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 10 \text{ V}$	N	20			A	
		$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	P	-20				
Drain-Source On-Resistance ^A	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 6.9 \text{ A}$	N			31	mΩ	
		$V_{GS} = 4.5 \text{ V}, I_D = 6 \text{ A}$				40		
		$V_{GS} = -10 \text{ V}, I_D = -5.2 \text{ A}$	P			52		80
		$V_{GS} = -4.5 \text{ V}, I_D = -4.2 \text{ A}$						
Forward Tranconductance ^A	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 6.9 \text{ A}$	N		25		S	
		$V_{DS} = -15 \text{ V}, I_D = -5.2 \text{ A}$	P		10			
Dynamic								
Total Gate Charge	Q_g	N-Channel $V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=6.9\text{A}$ P-Channel $V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-5.2\text{A}$	N		4.0		nC	
Gate-Source Charge	Q_{gs}		P		10			
			N		1.1			
			P		2.2			
			N		1.4			
Gate-Drain Charge	Q_{gd}		P		1.7			
Turn-On Delay Time	$t_{d(on)}$	N-Chaneel $V_{DD}=15\text{V}, V_{GS}=10\text{V}, I_D=1\text{A}$, $R_{GEN}=6\Omega$, P-Channel $V_{DD}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-1\text{A}$ $R_{GEN}=6\Omega$	N		8		nS	
Rise Time	t_r		P		10			
			N		5			
Turn-Off Delay Time	$t_{d(off)}$		P		2.8			
			N		23			
Fall-Time	t_f		P		53.6			
			N		3			
			P		46			

Notes

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

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Typical Electrical Characteristics (N-Channel)

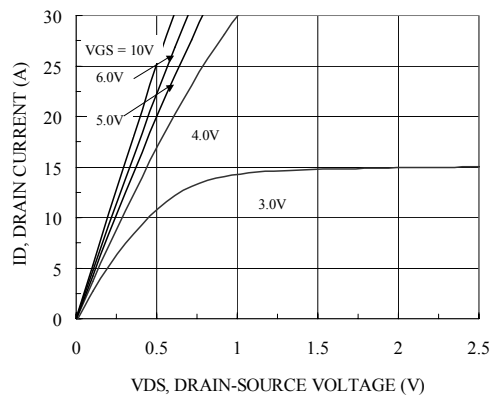


Figure 1. On-Region Characteristics

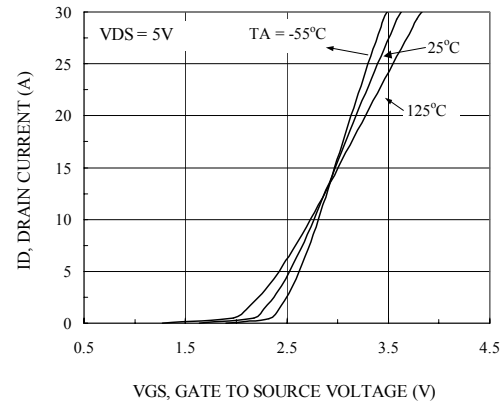


Figure 2. Body Diode Forward Voltage Variation with Source Current and Temperature

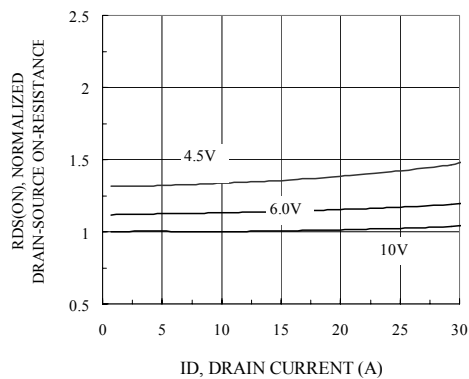


Figure 3. On Resistance Vs Vgs Voltage

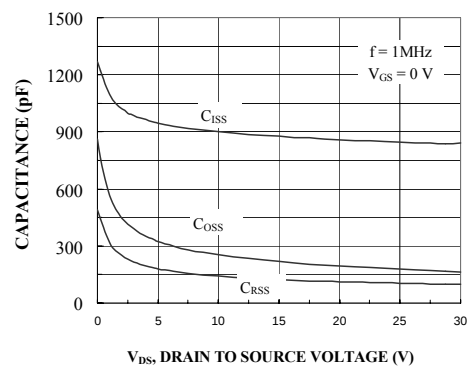


Figure 4. Capacitance Characteristics

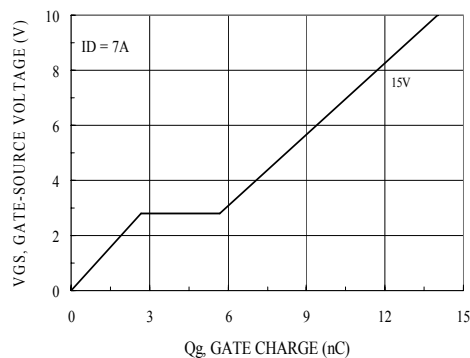


Figure 5. Gate Charge Characteristics

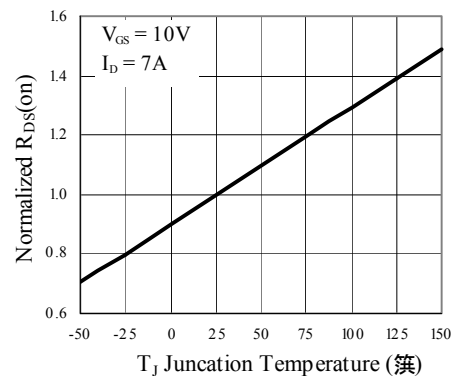


Figure 6. On-Resistance Variation with Temperature

Typical Electrical Characteristics (N-Channel)

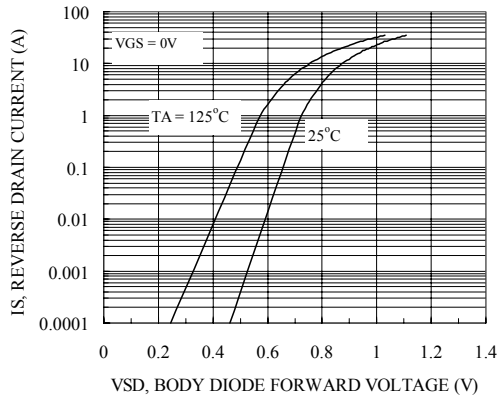


Figure 7. Transfer Characteristics

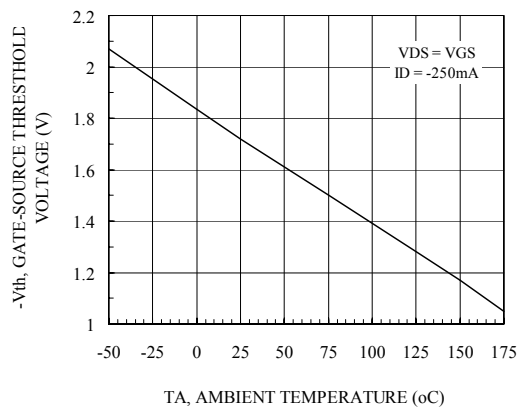


Figure 9. Vth Gate to Source Voltage Vs Temperature

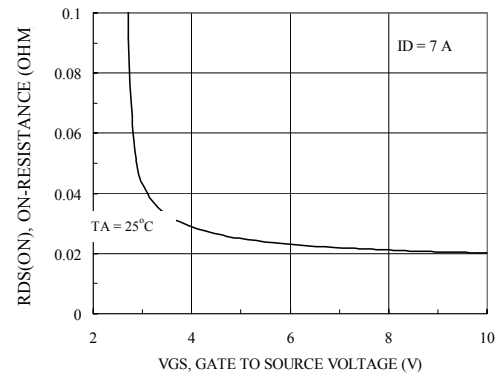


Figure 8. On-Resistance with Gate to Source Voltage

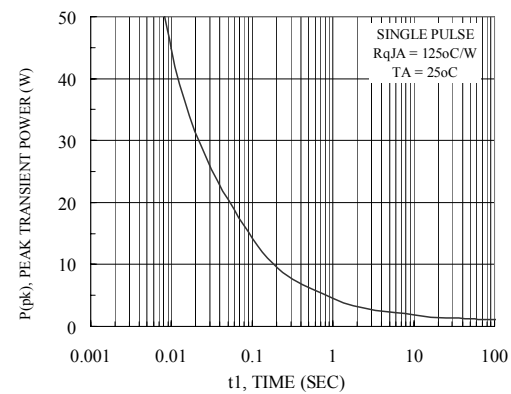


Figure 10. Single Pulse Maximum Power Dissipation

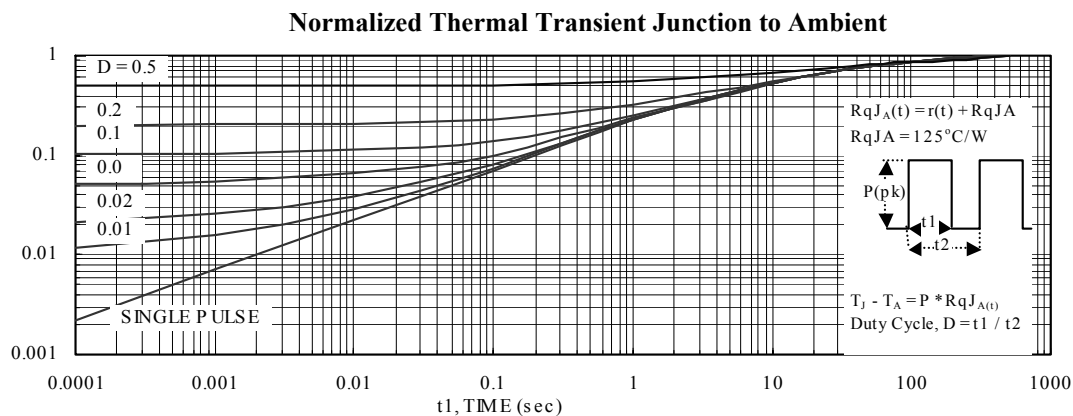


Figure 11. Transient Thermal Response Curve

Typical Electrical Characteristics (P-Channel)

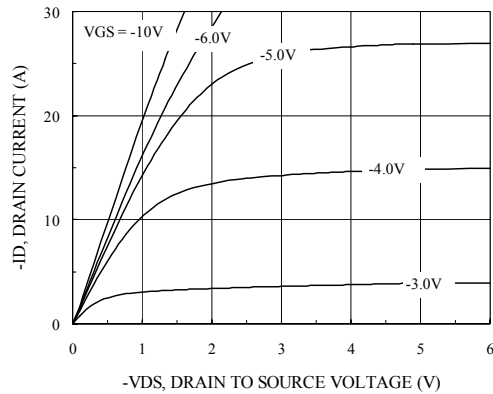


Figure 1. On-Region Characteristics

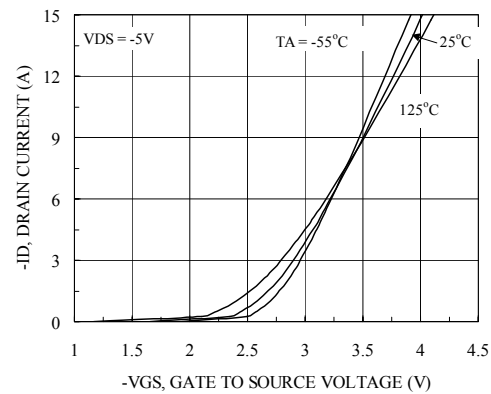


Figure 2. Body Diode Forward Voltage Variation with Source Current and Temperature

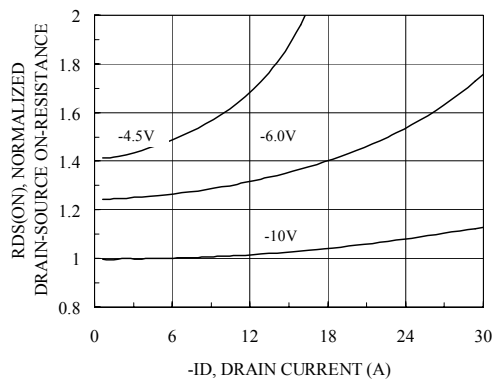


Figure 3. On Resistance Vs Vgs Voltage

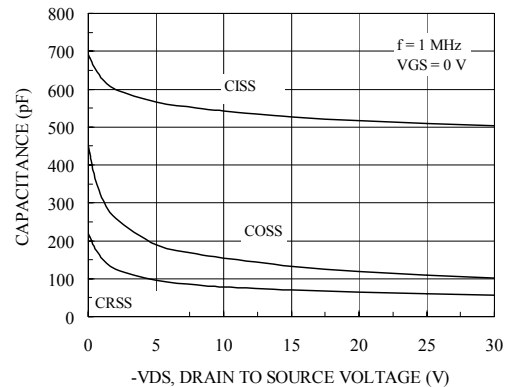


Figure 4. Capacitance Characteristics

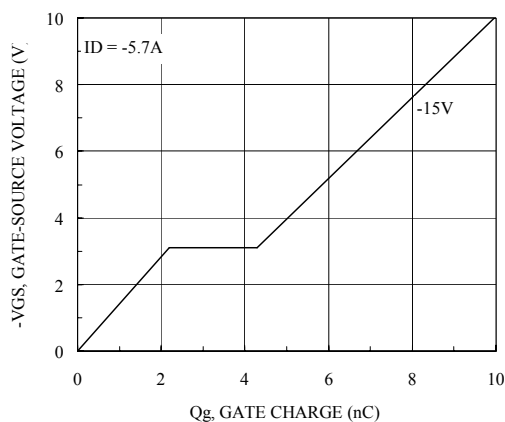


Figure 5. Gate Charge Characteristics

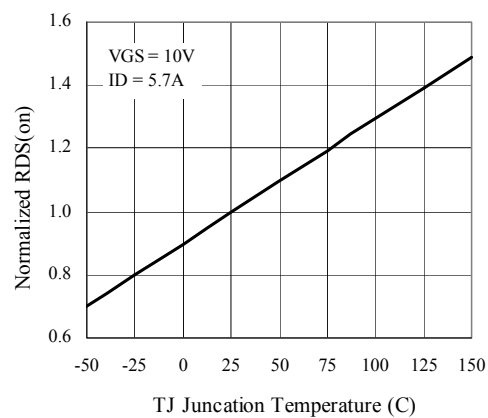


Figure 6. On-Resistance Variation with Temperature

Typical Electrical Characteristics (P-Channel)

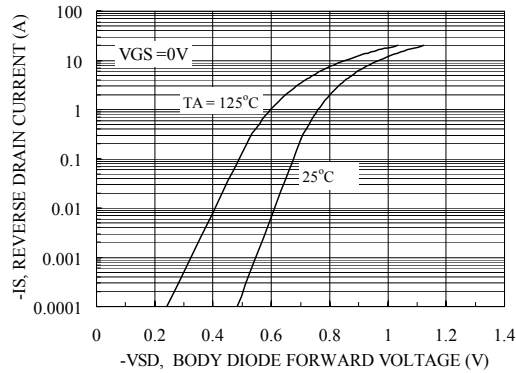


Figure 7. Transfer Characteristics

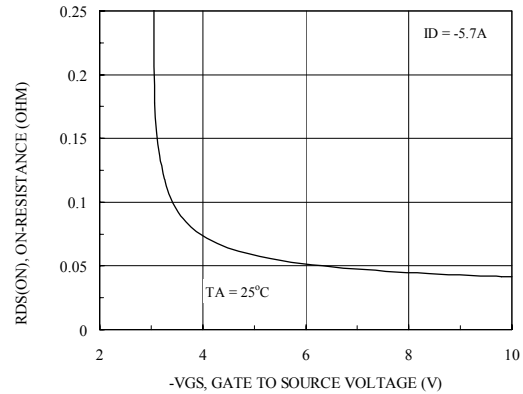


Figure 8. On-Resistance with Gate to Source Voltage

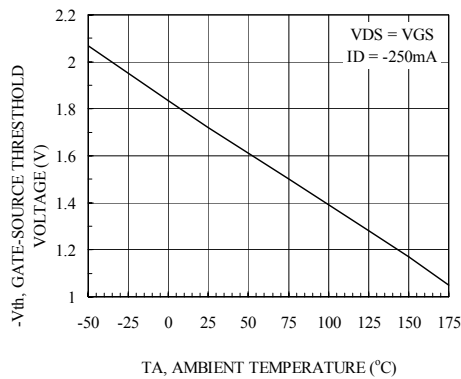


Figure 9. Vth Gate to Source Voltage Vs Temperature

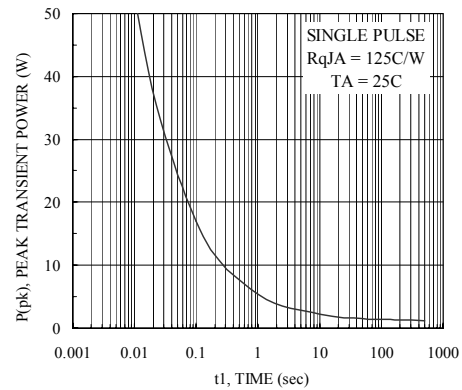


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

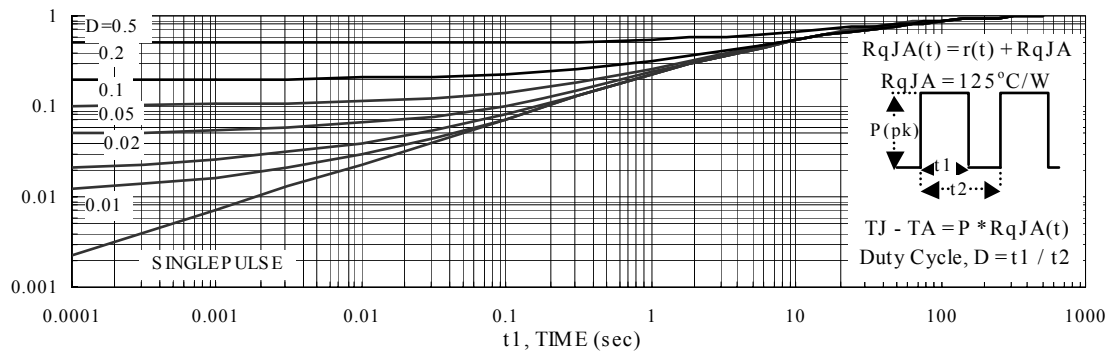
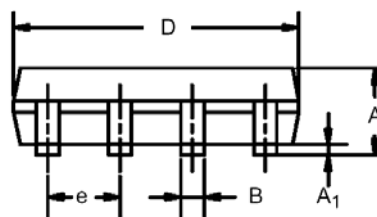
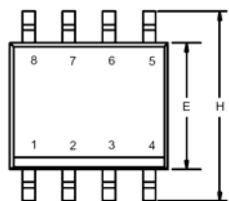


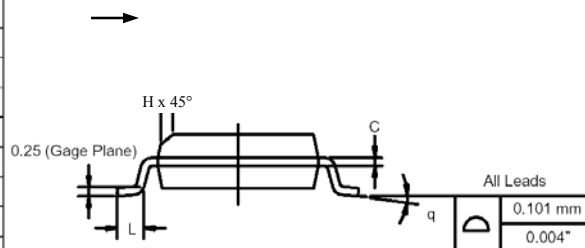
Figure 11. Transient Thermal Response Curve

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

- AM4512C-T1-XX
 - A: Analog Power
 - M: MOSFET
 - 4512: Part number
 - C: Complementary
 - T1: Tape & reel
 - XX: Blank: Standard
PF: Leadfree