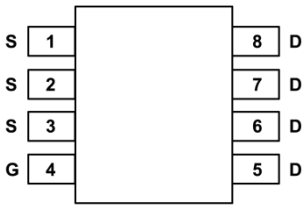
APM9435KC-HX P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
-30	0.042 at V_{GS} = - 10 V	-5.8
	0.055 at V_{GS} = - 6 V	- 5.0
	0.060 at V_{GS} = - 4.5 V	- 4.4

FEATURES

- TrenchFET® Power MOSFET

SOP-8



Top View

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted

Parameter		Symbol	10 s	Steady State	Unit
Drain-Source Voltage		V_{DS}	- 30		Vd
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	- 5.8	- 4.1	A
	T_A = 70 °C		- 4.6	- 3.2	
Pulsed Drain Current		I_{DM}	- 30		
Continuous Source Current (Diode Conduction)[a]		I_S	- 2.3	- 1.1	
Maximum Power Dissipation[a]	T_A = 25 °C	P_D	2.5	1.3	W
	T_A = 70 °C		1.6	0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 10 s	R_{thJA}	40	50	°C/W
	Steady State		70	95	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	24	30	

Notes

a. Surface Mounted on 1" x 1" FR4 board.

SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.[a]**	**Max.**	**Unit**
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.7		- 2.0	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 30 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 30 V, V_{GS} = 0 V, T_J = 70 °C			- 5	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} ≤ - 10 V, V_{GS} = - 10 V	- 20			A
		V_{DS} ≤ - 5 V, V_{GS} = - 4.5 V	- 5			
Drain-Source On-State Resistance[b]	$R_{DS(on)}$	V_{GS} = - 10 V, I_D = - 5.8 A		0.033	0.042	Ω
		V_{GS} = - 6 V, I_D = - 5 A		0.043	0.055	
		V_{GS} = - 4.5 V, I_D = - 4.4 A		0.056	0.060	
Forward Transconductance[b]	g_{fs}	V_{DS} = - 15 V, I_D = - 5.8 A		13		S
Diode Forward Voltage[b]	V_{SD}	I_S = - 2.3 A, V_{GS} = 0 V		- 0.8	- 1.1	V
Dynamic[a]						
Total Gate Charge	Q_g	V_{DS} = - 15 V, V_{GS} = - 10 V, I_D = - 3.5 A		16	24	nC
Gate-Source Charge	Q_{gs}			2.3		
Gate-Drain Charge	Q_{gd}			4.5		
Gate Resistance	R_g			8.8		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 15 V, R_L = 15 Ω, I_D ≅ - 1 A, V_{GEN} = - 10 V, R_g = 6 Ω		14	25	ns
Rise Time	t_r			14	25	
Turn-Off Delay Time	$t_{d(off)}$			42	70	
Fall Time	t_f			30	50	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = - 1.2 A, dI/dt = 100 A/µs		30	60	

Notes

a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

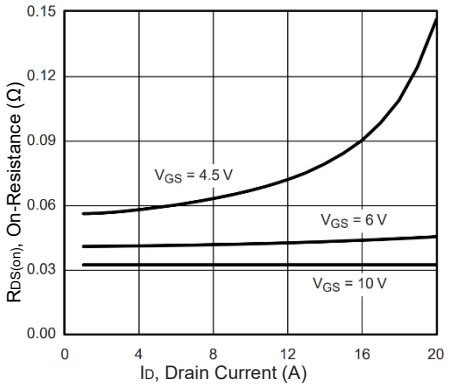


Fig 1. On-Resistance vs. Drain Current

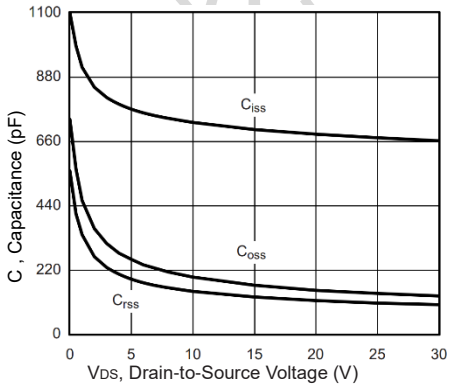


Fig 2. Capacitance

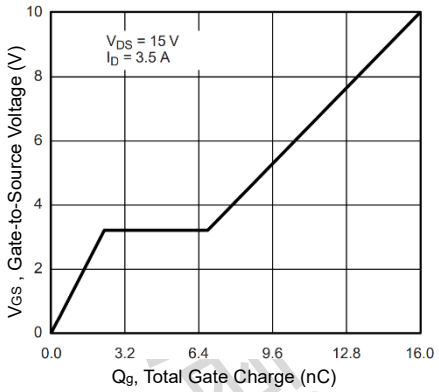


Fig 3. Gate Charge

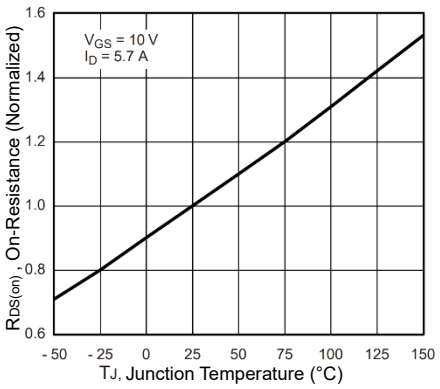


Fig 4. On-Resistance vs. Junction Temperature

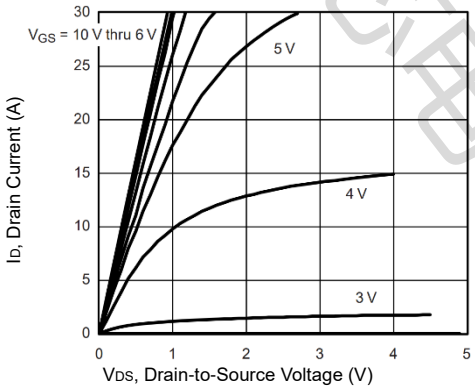


Fig 5. Output Characteristics

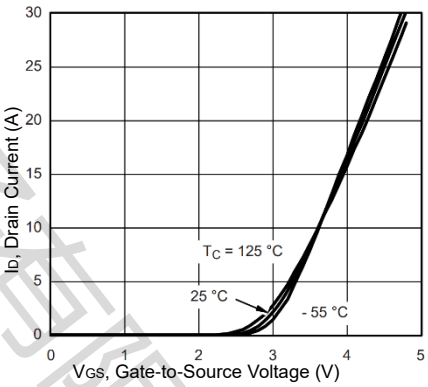


Fig 6. Transfer Characteristics

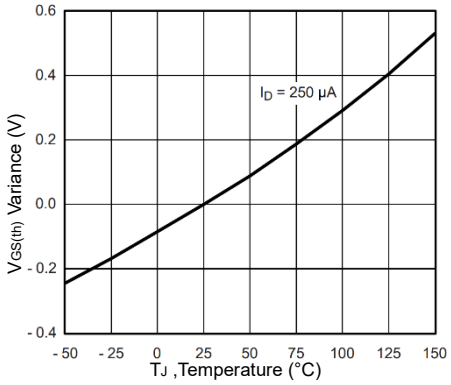


Fig 7. Threshold Voltage

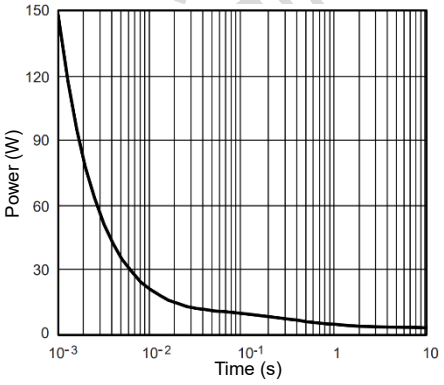


Fig 8. Single Pulse Power, Junction-to-Ambient

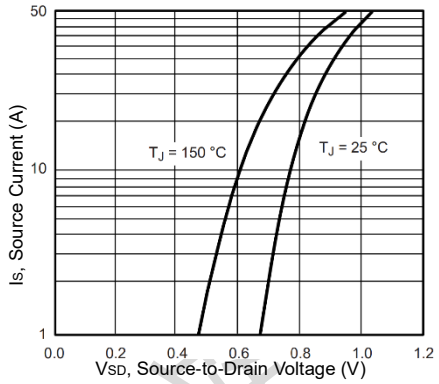


Fig 9. Source-Drain Diode Forward Voltage

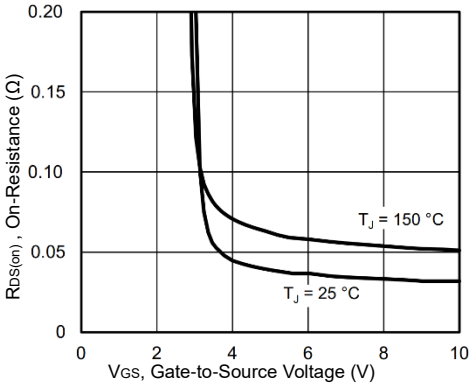
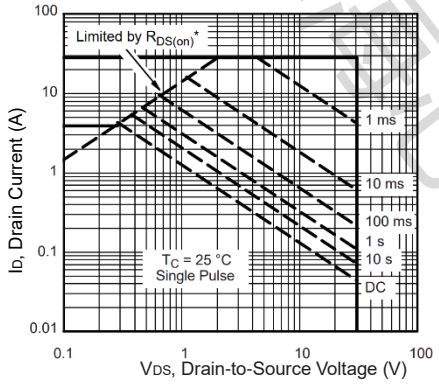


Fig 10. On-Resistance vs. Gate-to-Source Voltage



VDS > minimum VGS at which RDS(on) is specified

Fig 11. Safe Operating Area, Junction-to-Foot

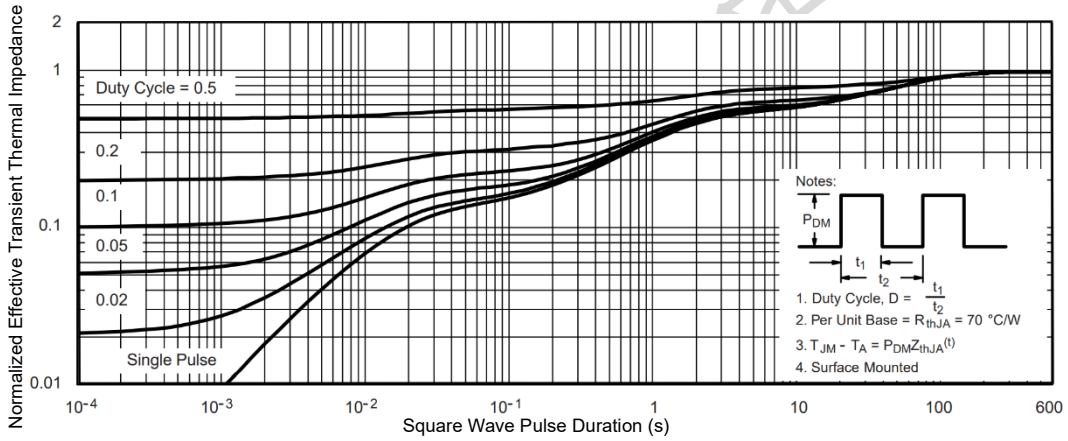


Fig 12. Normalized Thermal Transient Impedance, Junction-to-Ambient

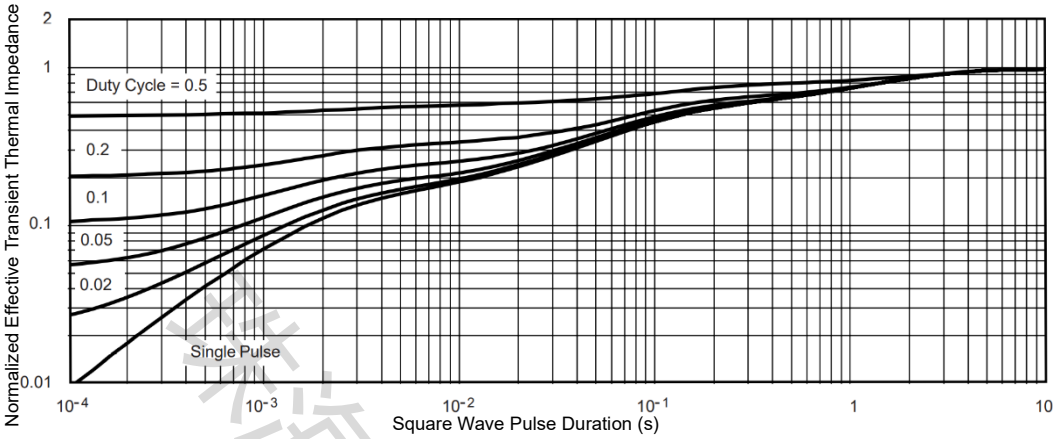
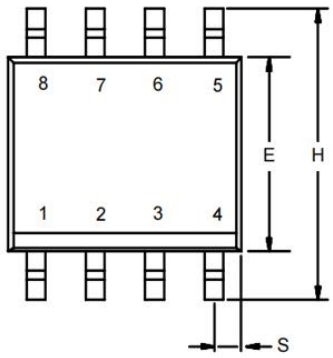
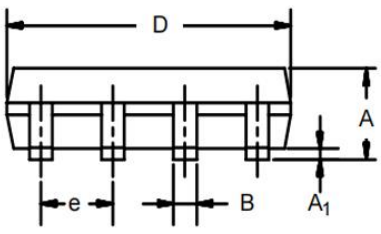


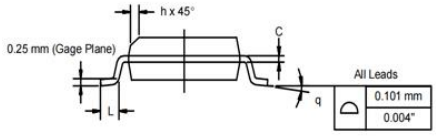
Fig 13. Normalized Thermal Transient Impedance, Junction-to-Foot

SOP-8 Package Outline

Dimensions are shown in millimeters (inches)

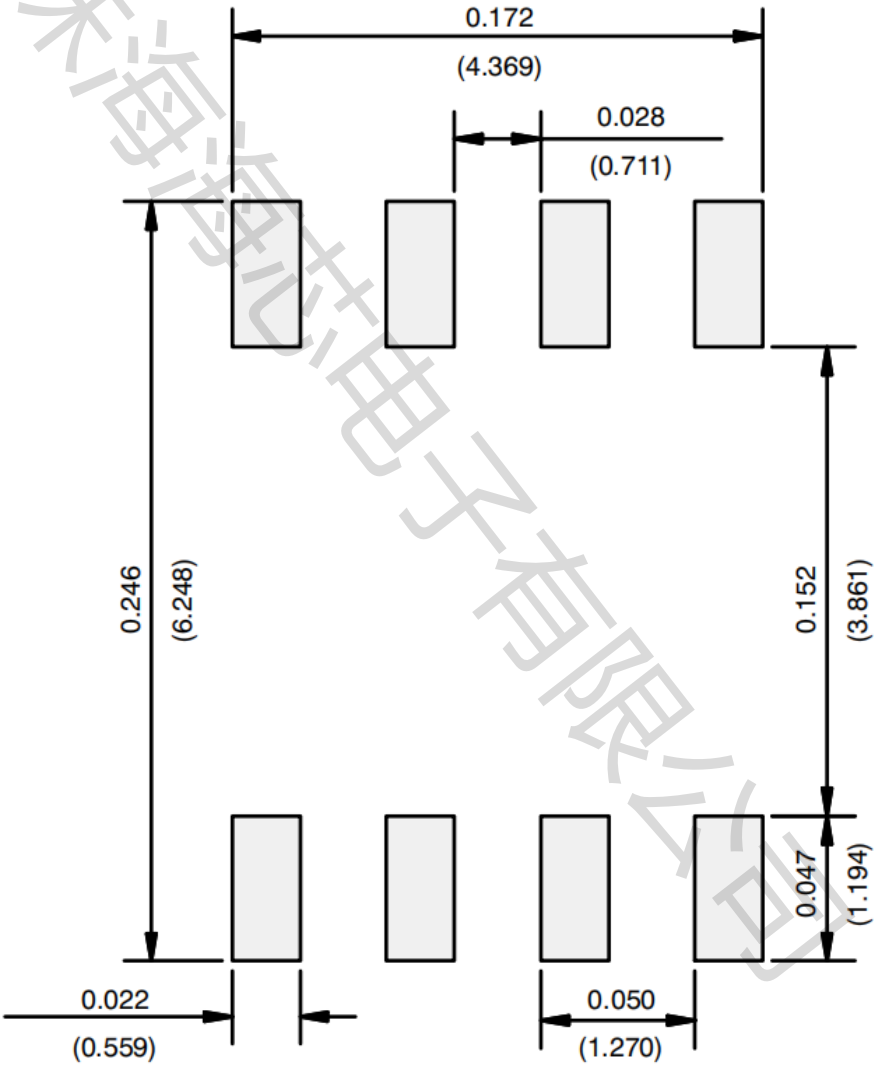






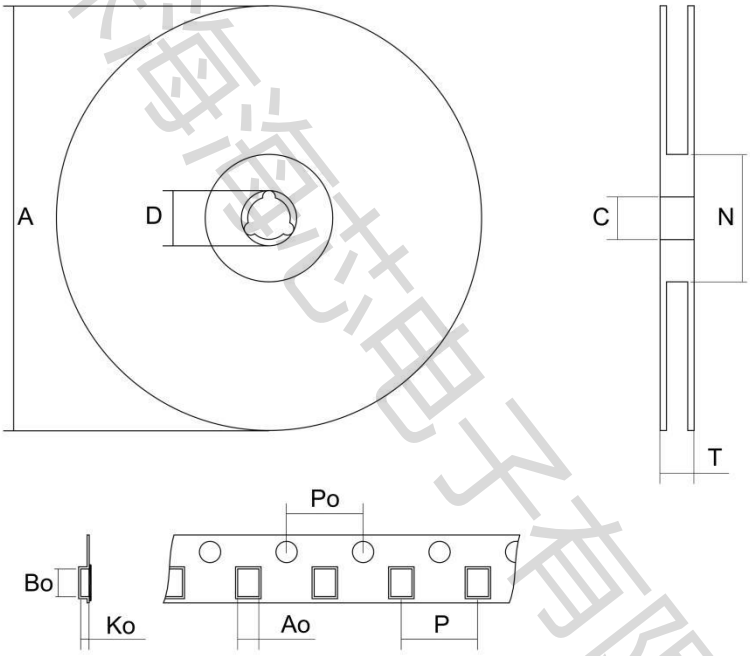
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A_1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

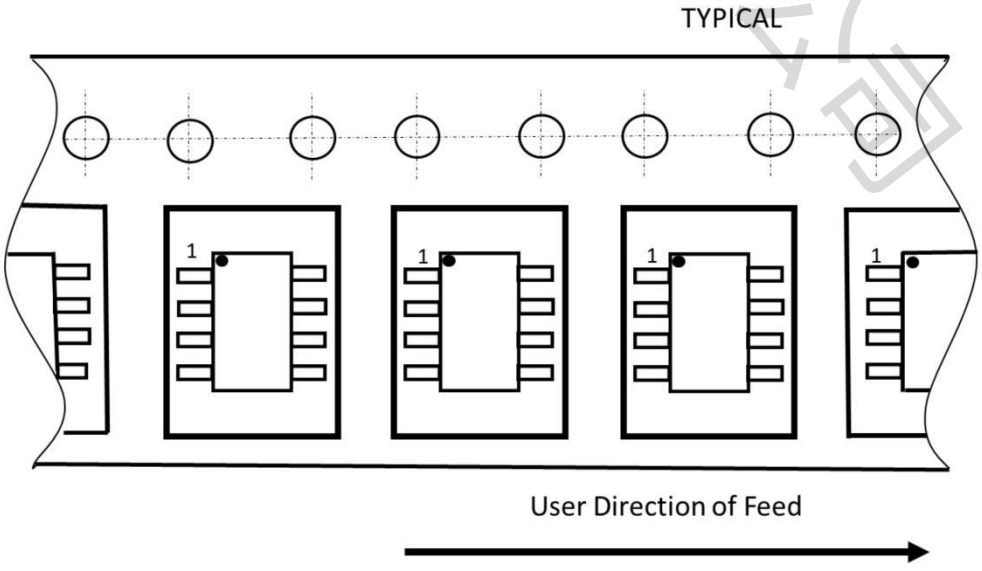


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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