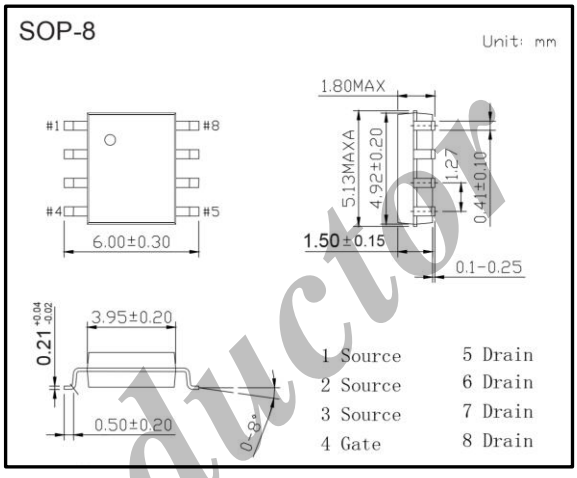
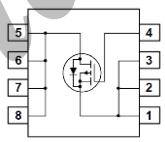
AP9435DY
30V P-Channel Enhancement Mode MOSFET

- **General Description**

AP9435DY combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is most suitable to load-switch or PWM applications.



Top View



Pb-Free

RoHS COMPLIANT

- **Applications**

- DC-DC converter for portable devices
- Load switch

- **Product Summary**

V_{DS}	-30V
I_D (at V_{GS} = -10V)	-5.3A
$R_{DS(ON)}$ (at VGS = -10V)	< 50mΩ
$R_{DS(ON)}$ (at VGS = -4.5V)	< 80mΩ

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current		I_D	-5.3	A
Pulsed Drain Current		I_{DM}	-20	
Power Dissipation	Note 1	P_D	2.5	W
	Note 2		1.2	
	Note 3		1	
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	25	
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to 150	

Note 1: 50°C/W when mounted on a 1in² pad of 2 oz copper
Note 2: 105°C/W when mounted on a .04in² pad of 2 oz copper
Note 3: 125°C/W when mounted on a minimum pad

- **Electrical Characteristics Ta = 25℃**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
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	-1.0		-3	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-5.3A (Note 4)			50	mΩ
		V_{GS}=-10V, I_D=-5.3A, T_J=125℃ (Note 4)			79	
		V_{GS}=-4.5V, I_D=-4.2A (Note 4)			80	
On-State Drain Current	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V (Note 4)	-20			A
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-5.3A (Note 4)		12		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		690		pF
Output Capacitance	C_{oss}			306		
Reverse Transfer Capacitance	C_{rss}			77		
Total Gate Charge	Q_g	V_{GS}=-15V, V_{DS}=-10V, I_D=-5.3A		14	23	nC
Gate Source Charge	Q_{gs}			2.4		
Gate Drain Charge	Q_{gd}			4.8		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, I_D=-1A, R_{GEN}=6Ω		7	14	ns
Turn-On Rise Time	t_r			10	18	
Turn-Off Delay Time	$t_{d(off)}$			19	34	
Turn-Off Fall Time	t_f			11	20	
Maximum Body-Diode Continuous Current	I_S				-5.3	A
Diode Forward Voltage	V_{SD}	I_S=-5.3A, V_{GS}=0V (Note 4)			-1.2	V

Note 4: Pulse Test - Pulse Width ≤300μs, Duty Cycle≤ 2%.

- **Ordering Information**

Ordering Part Number	Package	MOQ
AP9435DY	SOP-8	2,500 pcs / reel

- **Typical Characteristics**

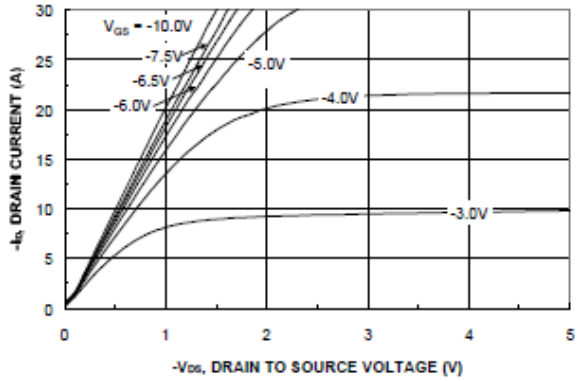


Figure 1. On-Region Characteristics.

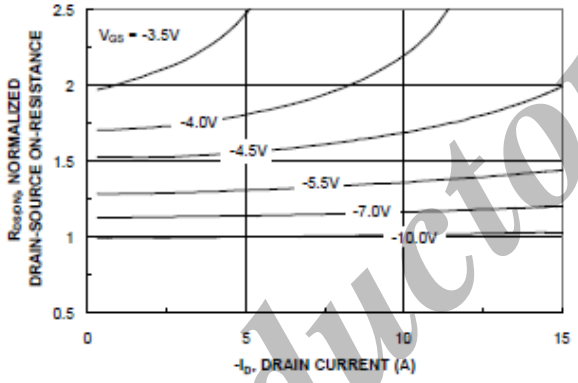


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

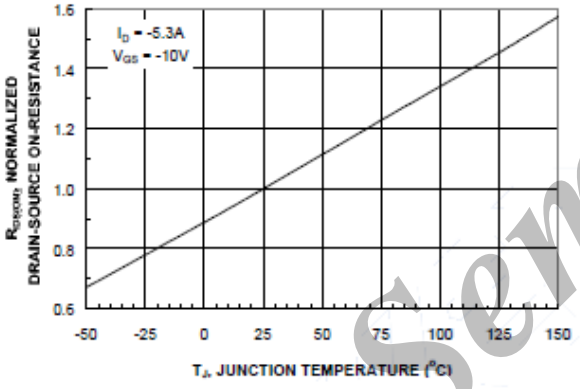


Figure 3. On-Resistance Variation with Temperature.

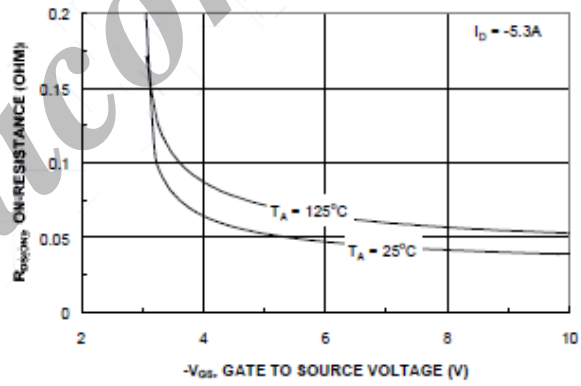


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

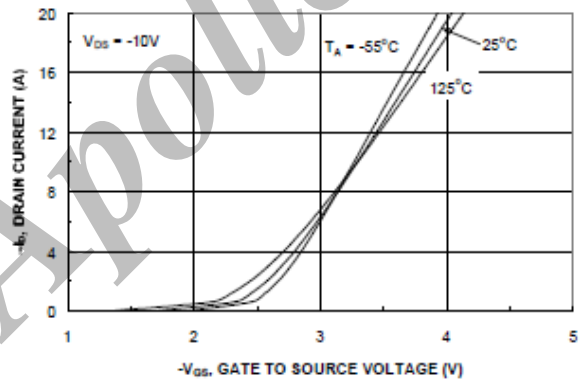


Figure 5. Transfer Characteristics.

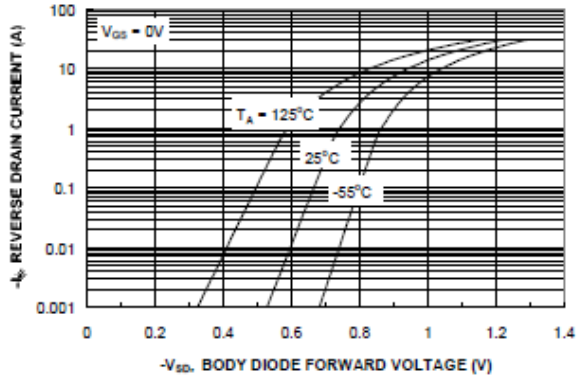


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

- **Typical Characteristics**

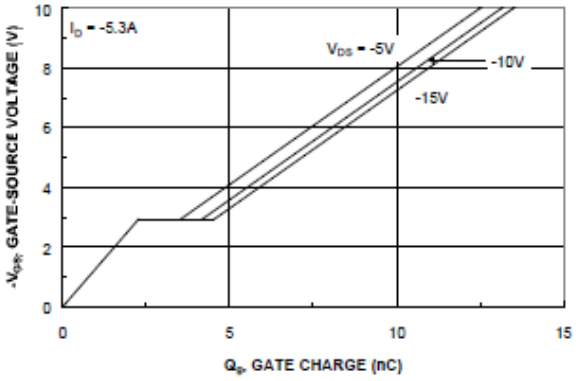


Figure 7. Gate Charge Characteristics.

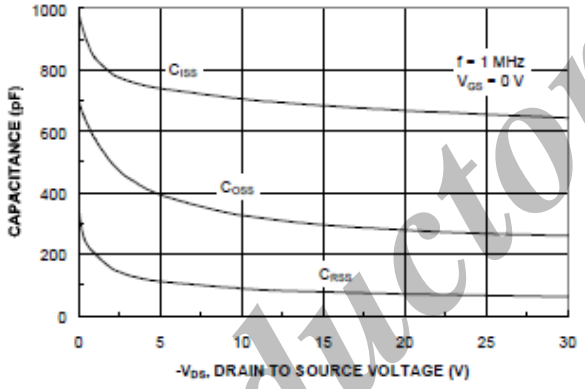


Figure 8. Capacitance Characteristics.

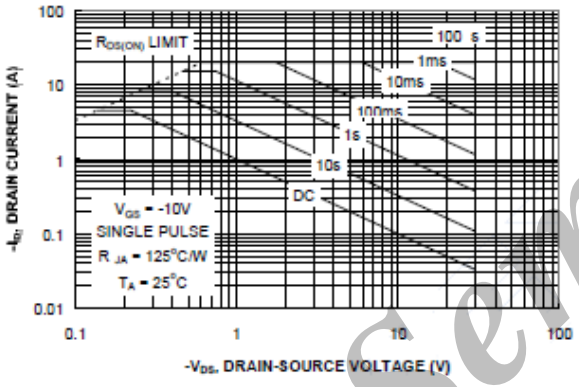


Figure 9. Maximum Safe Operating Area.

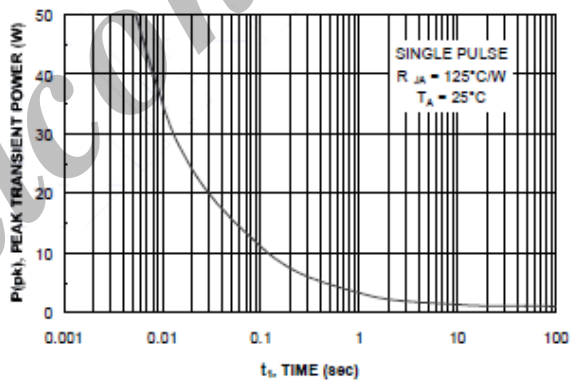


Figure 10. Single Pulse Maximum Power Dissipation.

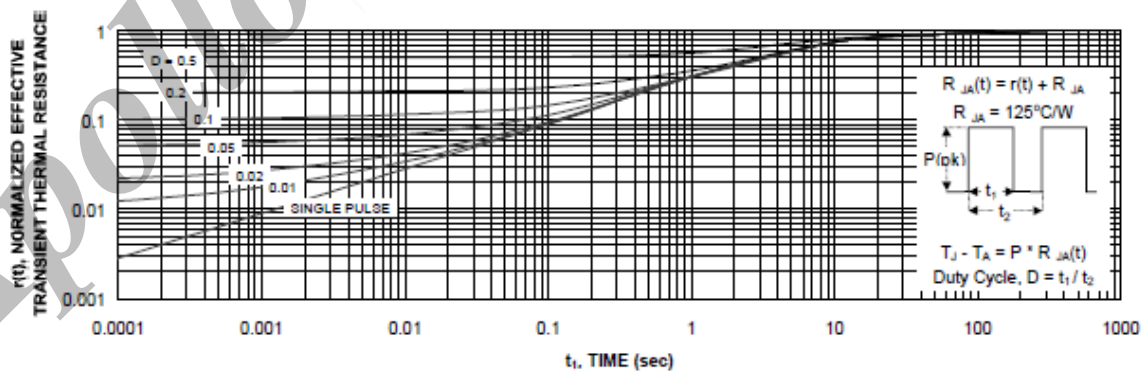


Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in Note 1c.
Transient thermal response will change depending on the circuit board design.

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