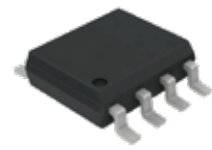


FEATURES

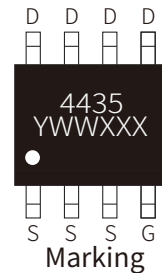
- Advanced trench cell design
- Low Thermal Resistance



SOP-8

APPLICATION

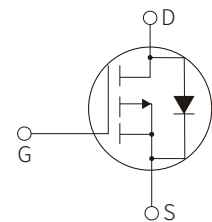
- Motor drivers
- DC - DC Converter



Marking

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage $T_c=25^\circ\text{C}$	V_{DS}	-30	V
Drain Current (Pulsed) $T_c=25^\circ\text{C}$ $V_{GS}=-10\text{V}$	I_{DM}^{***}	-60	A
Drain Current $T_c=25^\circ\text{C}$ $V_{GS}=-10\text{V}$	I_D^*	-10	A
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Total Power Dissipation $T_c=25^\circ\text{C}$	P_{tot}^*	20	W
Diode Forward Current $T_c=25^\circ\text{C}$	I_S	-10	A
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Resistance- Junction to Ambient	$R_{\theta JC}^{**}$	6	$^\circ\text{C/W}$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{sec}$
- ** Pulse width $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$
- ** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.0		-2.0	V
Zero Gate Voltage Source Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA
		$V_{DS}=-24V, V_{GS}=0V, T_J=85^{\circ}C$			-30	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Drain-Source On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_D=-8A$		14.5	18	m Ω
		$V_{GS}=-4.5V, I_D=-5A$		24	28	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=-8A, V_{GS}=0V$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-8A$ $dI_{SD}/dt=100A/\mu s$		8.3		nS
Reverse Recovery Charge	Q_{rr}			0.6		nC
Dynamic Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V,$ Frequency = 1 MHz		1811		pF
Output capacitance	C_{oss}			172		pF
Reverse transfer capacitance	C_{rss}			134		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-15V, V_{GEN}=-10V$ $R_G=4.5\Omega, R_L=0.75\Omega,$ $I_D=-8A$		18		nS
Turn-on Rise Time	t_r			86		nS
Turn-Off Delay Time	$t_{d(off)}$			231		nS
Turn-Off Fall Time	t_f			127		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V, I_{DS}=-8A$		31		nC
Gate-Source Charge	Q_{gs}			8.6		nC
Gate-Drain Charge	Q_{gd}			4.8		nC

Notes:

a : Pulse test ; pulse width ≤ 300μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

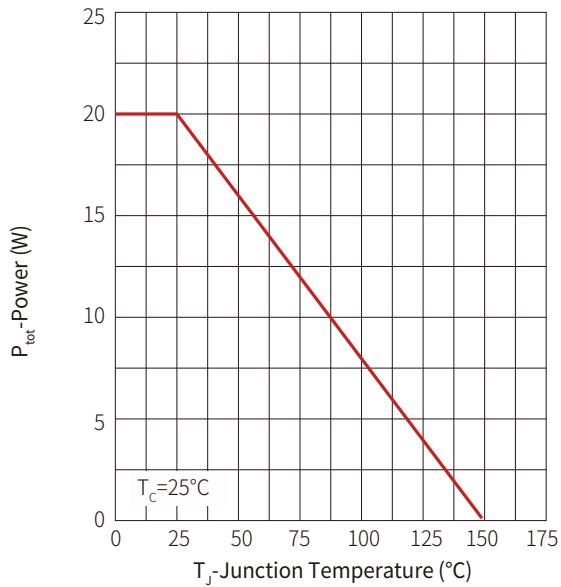


Figure2: Current Capability

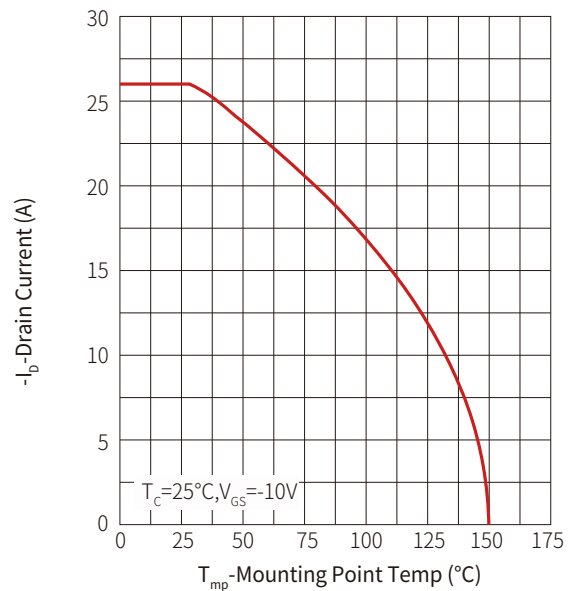


Figure3: Safe operating Area

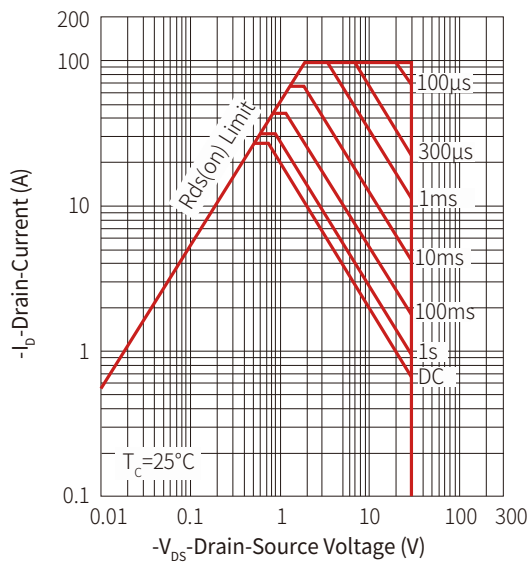
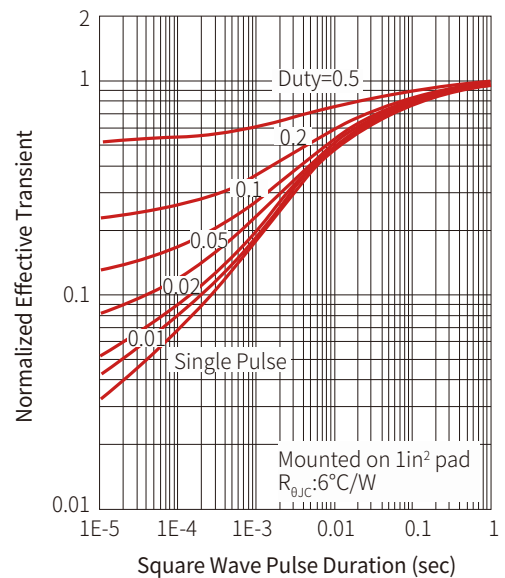


Figure 4: Transient Thermal Impedance



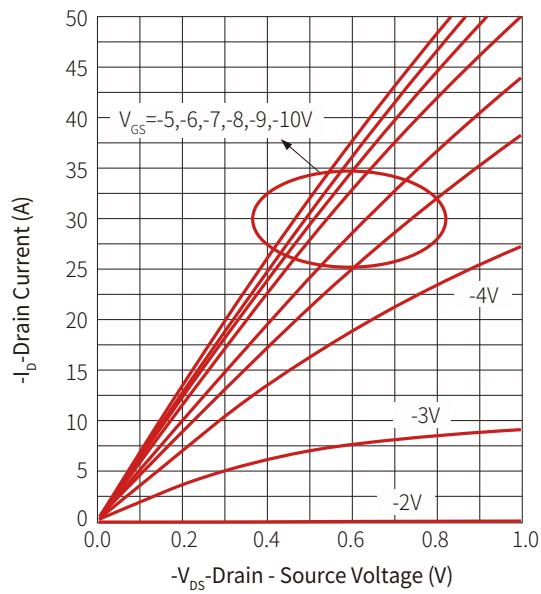
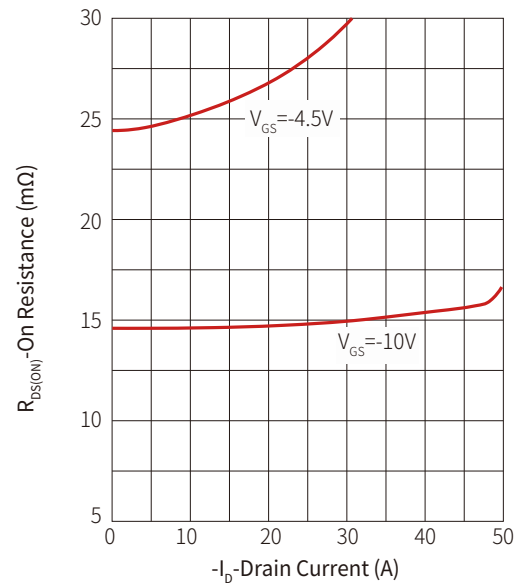
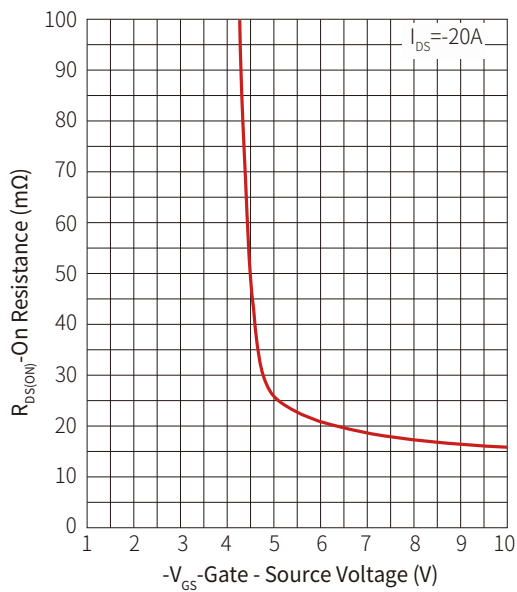
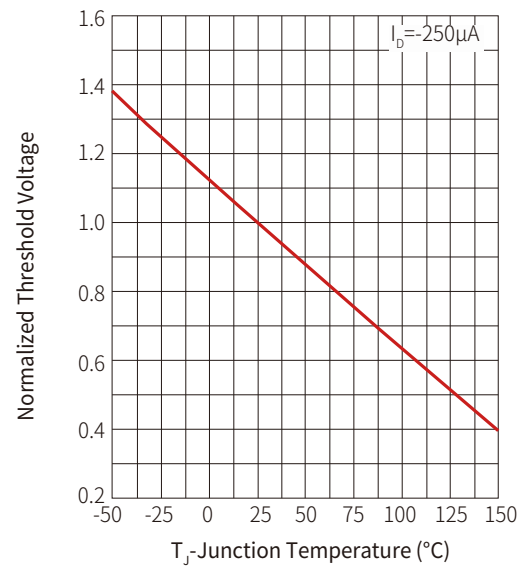
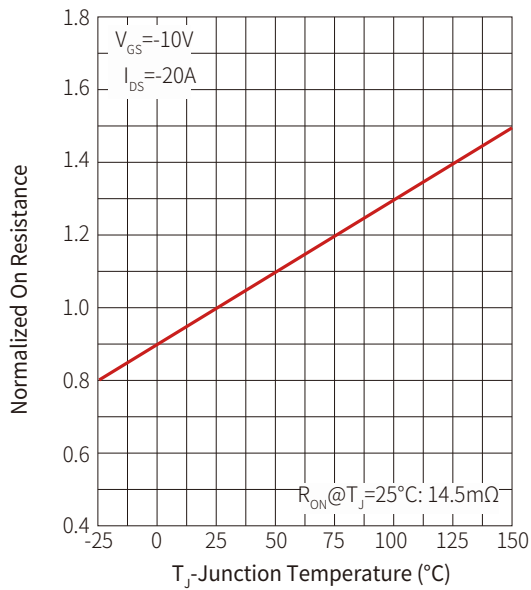
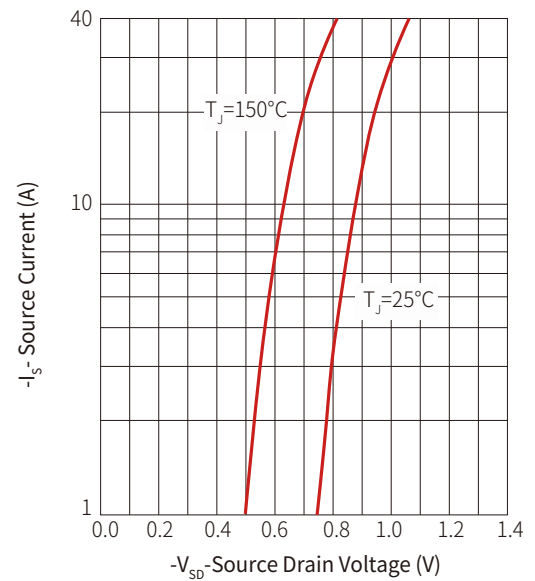
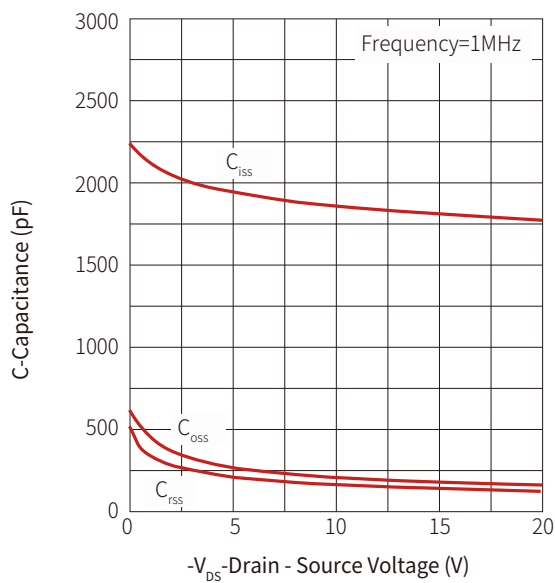
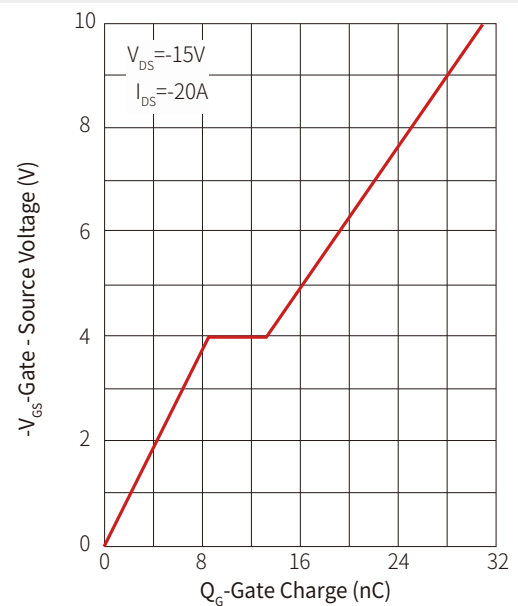
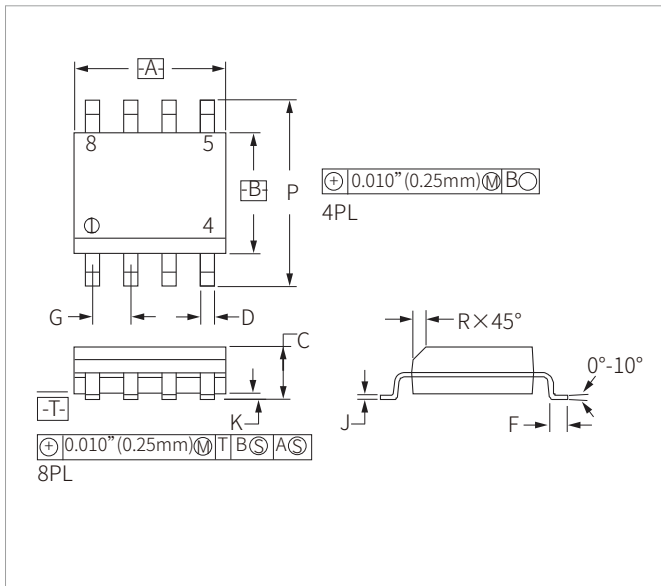
**Figure 5: Output Characteristics****Figure 6: On Resistance****Figure 7: Transfer Characteristics****Figure 8: Normalized Threshold Voltage**

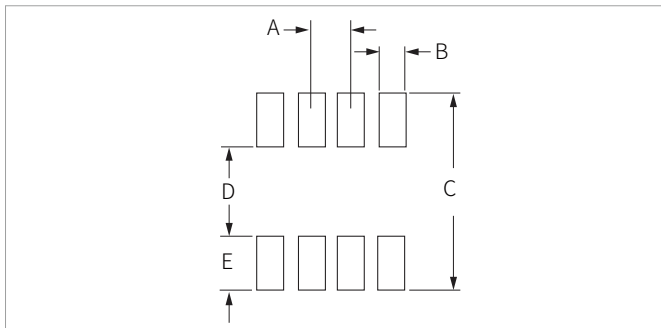
Figure 9: Normalized On Resistance

Figure 10: Diode Forward Current

Figure 11: Capacitance

Figure 12: Gate Charge


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
B	3.80	4.20	0.150	0.165
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27BSC		0.050BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.008
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	1.14	1.40	0.045	0.055
B	0.64	0.89	0.025	0.035
C	6.22	-	0.245	-
D	3.94	4.17	0.155	0.165
E	1.02	1.27	0.040	0.050

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM4435S	SOP-8	3000PCS	13"

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