

FEATURES

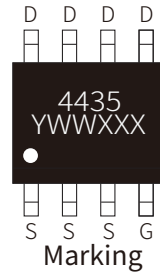
- | Advanced trench cell design
- | Low Thermal Resistance



SOP-8

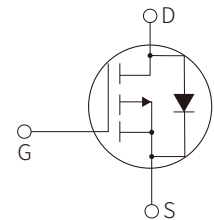
APPLICATION

- | Motor drivers
- | DC - DC Converter



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	$^\circ\text{C}/\text{W}$

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} =-250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =-250μA	-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°C			-30	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Drain-Source On-State Resistance	R _{DS(on)} ^a	V _{GS} =-10V, I _D =-8A		14.5	18	mΩ
		V _{GS} =-4.5V, I _D =-5A		24	28	mΩ
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/μs		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 =4.5Ω, R _L =0.75Ω, 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

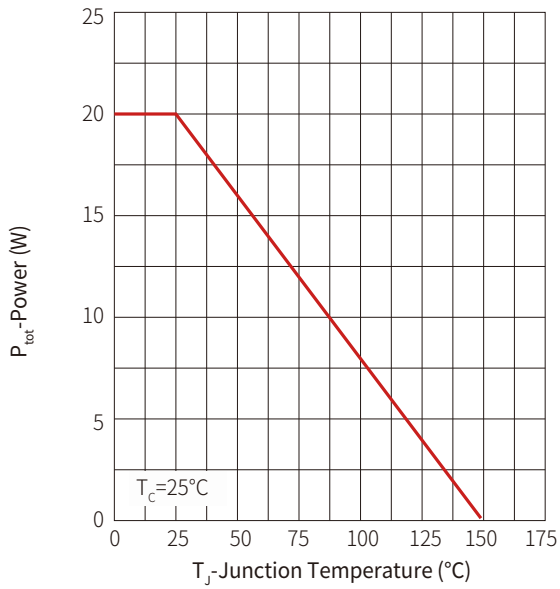


Figure2: Current Capability

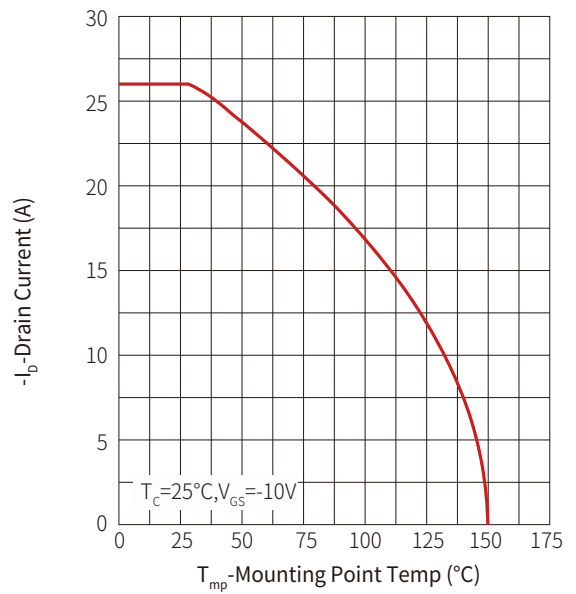


Figure3: Safe operating Area

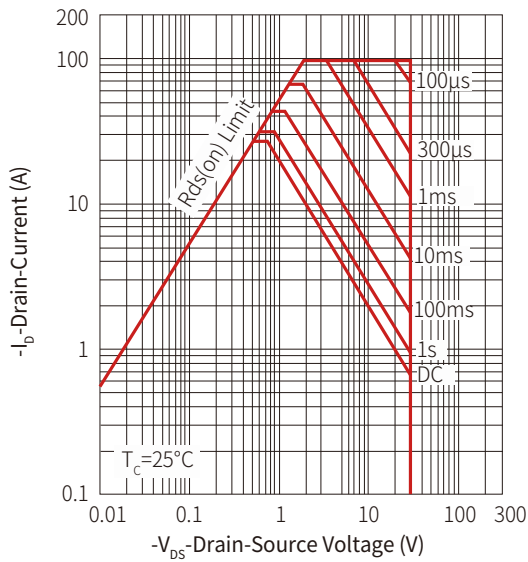


Figure 4: Transient Thermal Impedance

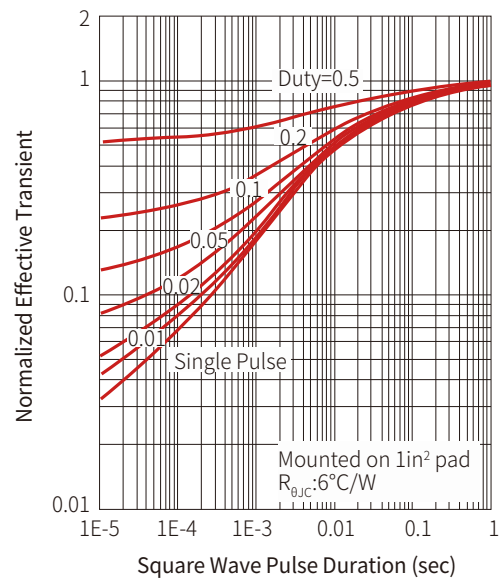


Figure 5: Output Characteristics

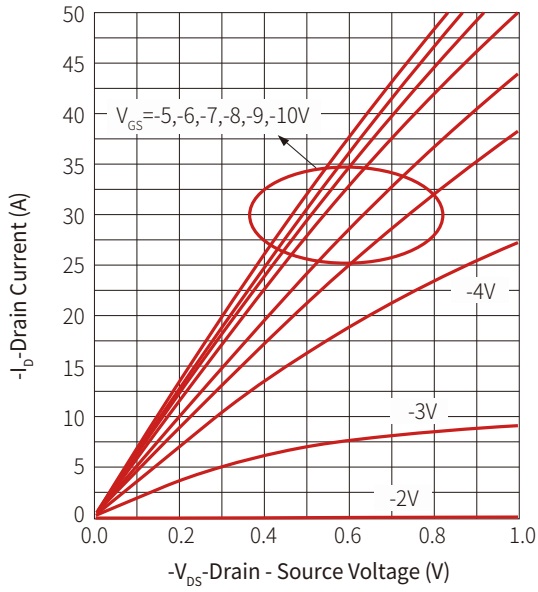


Figure 6: On Resistance

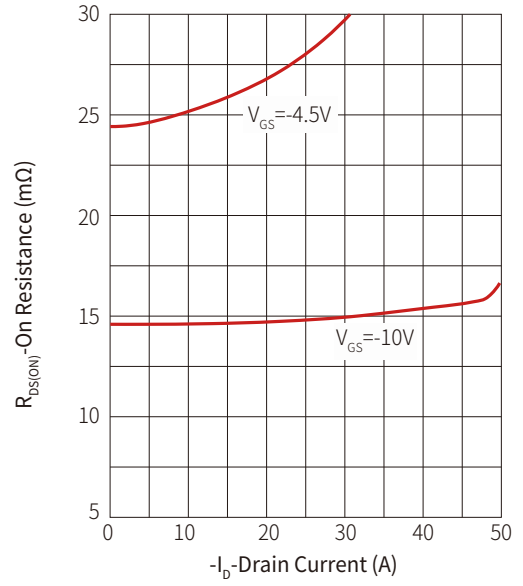


Figure 7: Transfer Characteristics

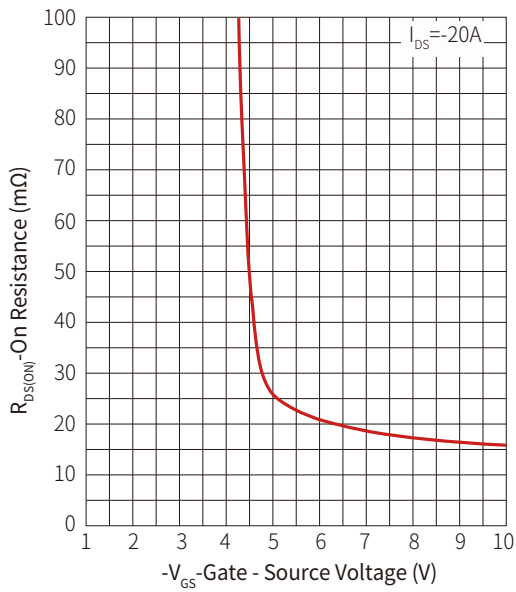


Figure 8: Normalized Threshold Voltage

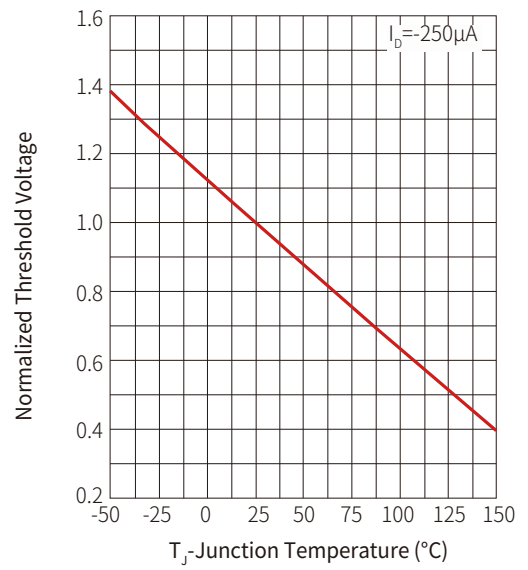


Figure 9: Normalized On Resistance

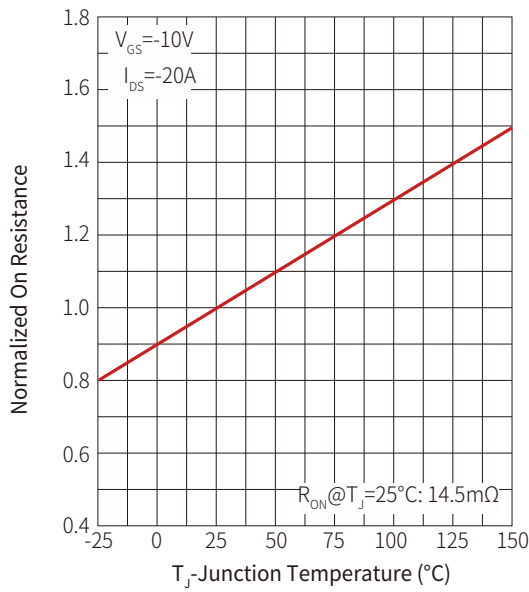


Figure 10: Diode Forward Current

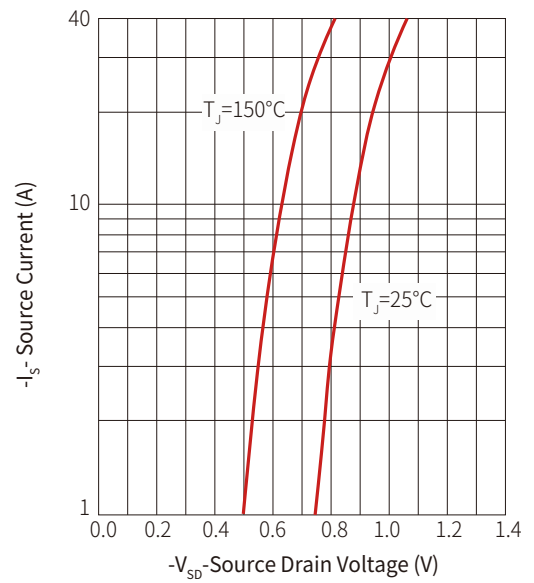


Figure 11: Capacitance

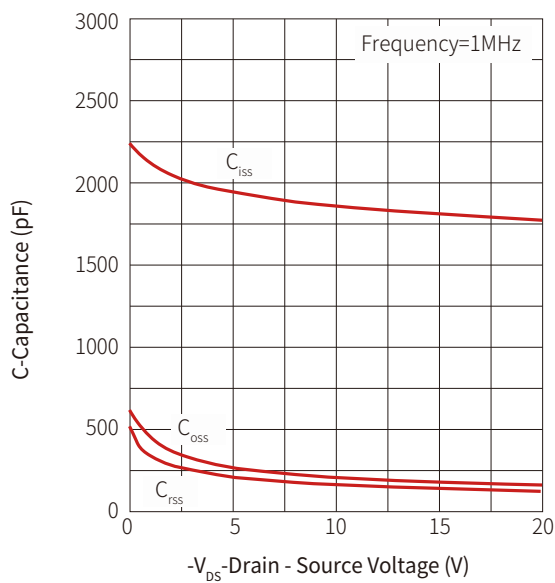
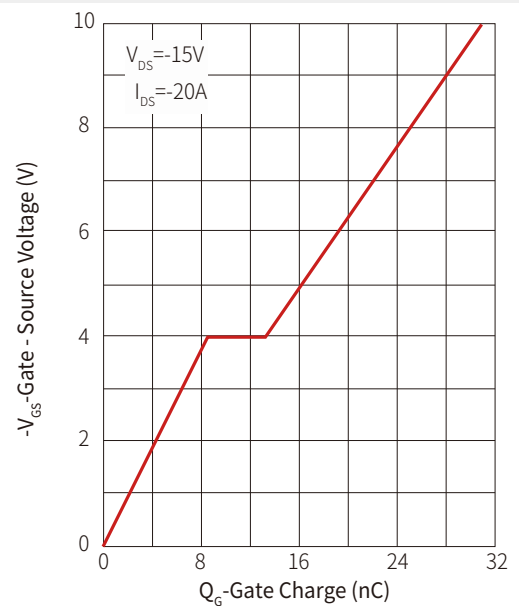
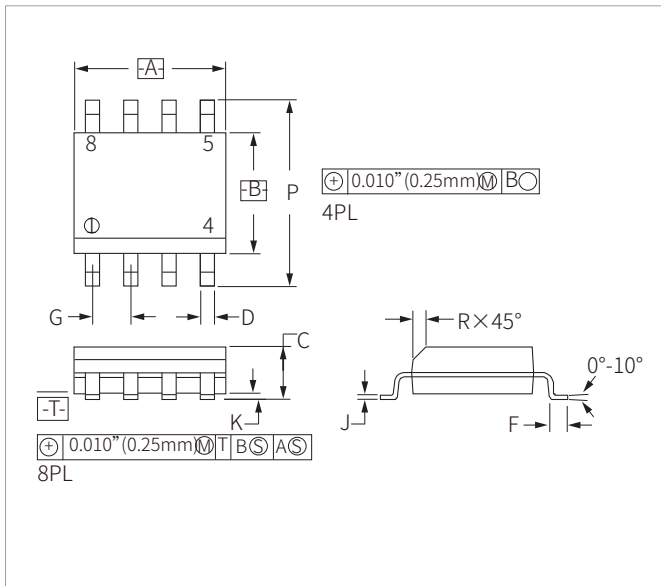


Figure 12: Gate Charge

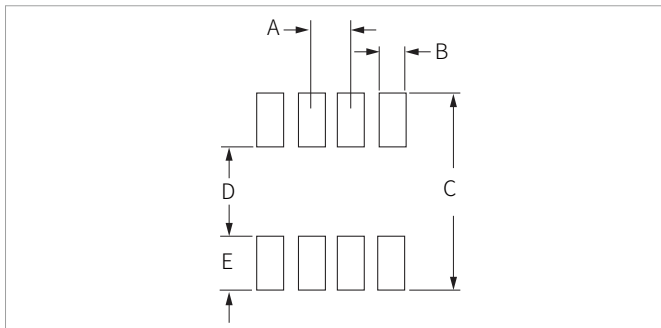


SOP-8 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
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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