30V, 4.8mΩ, 18A, Single N-Channel

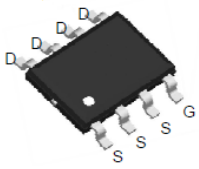
1.Features

- 30V MOSFET technology
- Low on-state resistance
- Fast switching
- Vgs±20V

V_{DS}	$R_{DS(on)}$ Typ.	I_D
30V	4.8mΩ @ 10V	18A
	8.5mΩ @ 4.5V	

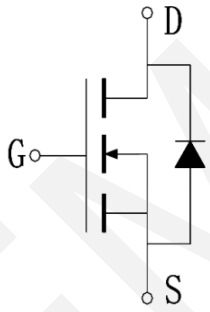
2.Applications

- Power Switching Application
- Load Switching



SOP8

Pin Description



Schematic Diagram

3. Order Information

Part Number	Grade	V_{DSS}	V_{GSS}	$V_{GS(th)}$	I_D	$R_{DS(on)}$
WP4430	A	30V	±20V	1.5V	18A	4.8mΩ
WP4430	B	30V	±20V	1.5V	18A	5.8mΩ

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	18	A
Drain Current (Pulse), PW≤300μs	I_{DP}	48	A
Total Dissipation	P_D	3	W
Avalanche Energy, Single Pulsed	E_{AS}	135	mJ
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

5.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Maximum Junction-to-Ambient	$R_{\theta JA}$	31	℃/W

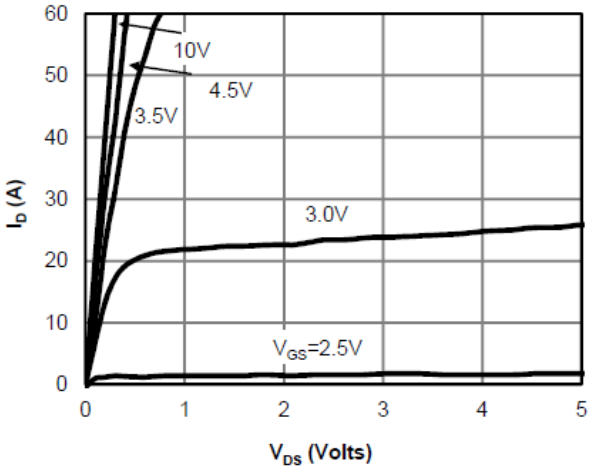
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

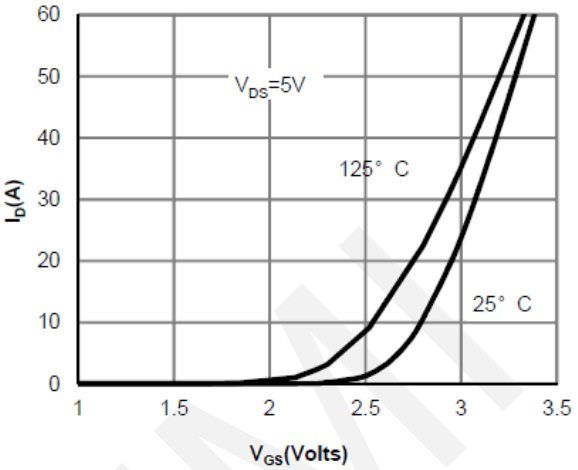
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.0		2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$ **Grade A**	I_D = 12A, V_{GS} = 10V		4.8	5.8	mΩ
		I_D = 10A, V_{GS} = 4.5V		8.5	12	mΩ
Static Drain to Source On-State Resistance	$R_{DS(on)}$ **Grade B**	I_D = 12A, V_{GS} = 10V		5.8	7	mΩ
		I_D = 10A, V_{GS} = 4.5V		12	20	mΩ
Forward Transconductance	G_{FS}	I_D = 12A, V_{DS} = 5V	80			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		6060		pF
Output Capacitance	C_{oss}			638		pF
Reverse Transfer Capacitance	C_{rss}			355		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DS} = 15V, R_L = 0.83 Ω, V_{GS} = 10V, R_{GEN} = 3Ω		12		ns
Rise Time	t_r			8		ns
Turn-OFF Delay Time	$t_{d(off)}$			51.5		ns
Fall Time	t_f			8.8		ns
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 10V, I_{DS} = 12A		103		nC
	Q_{gs}			18		nC
	Q_{gd}			15		nC
Diode Forward Voltage	V_{FSD}	I_S = 1A, V_{GS} = 0V			1.2	V

Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

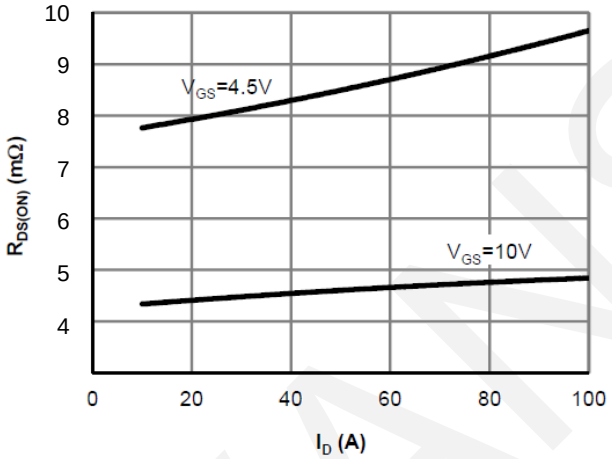
7.Typical electrical and thermal characteristics



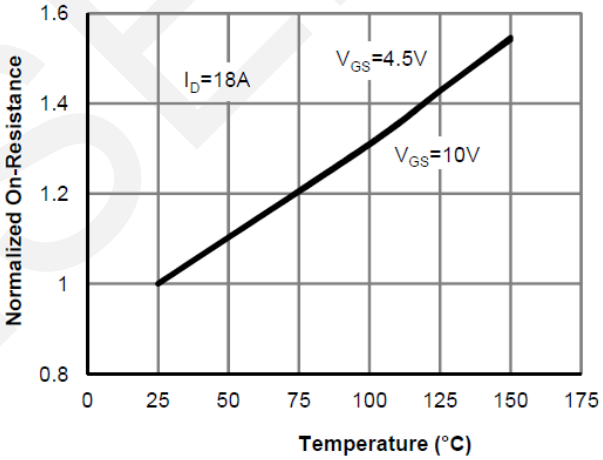
On-Region Characteristics



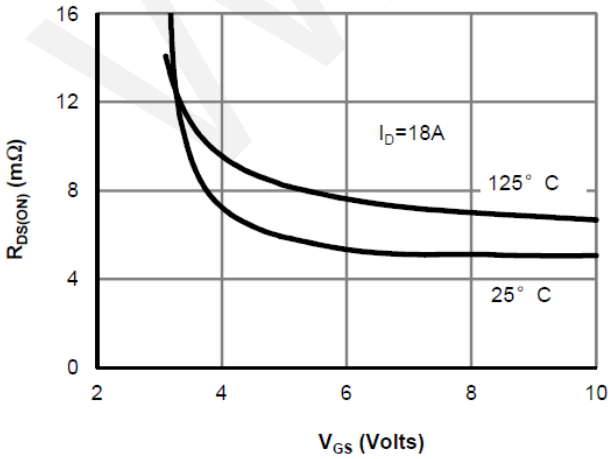
Transfer Characteristics



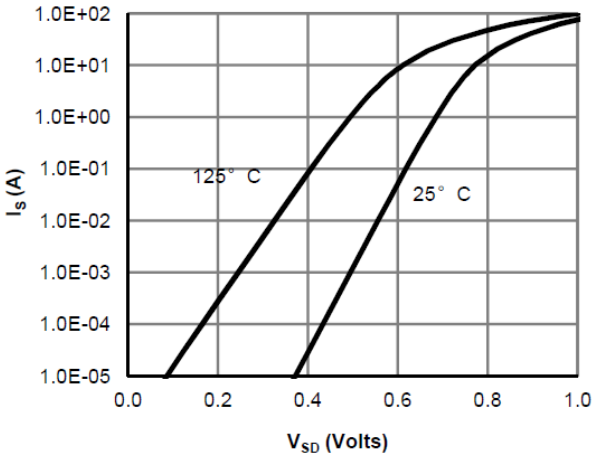
On-Resistance vs. Drain Current and Gate Voltage



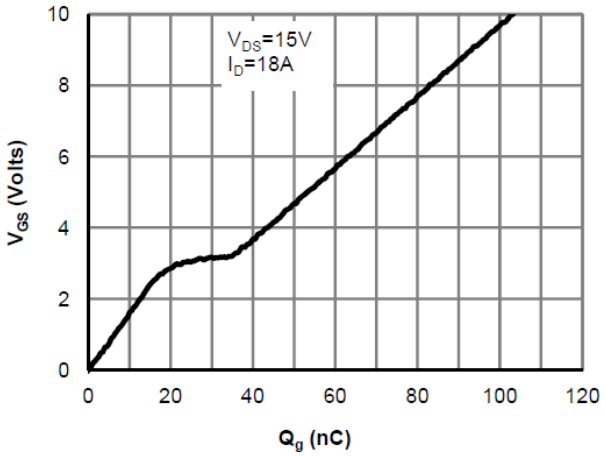
On-Resistance vs. Junction Temperature



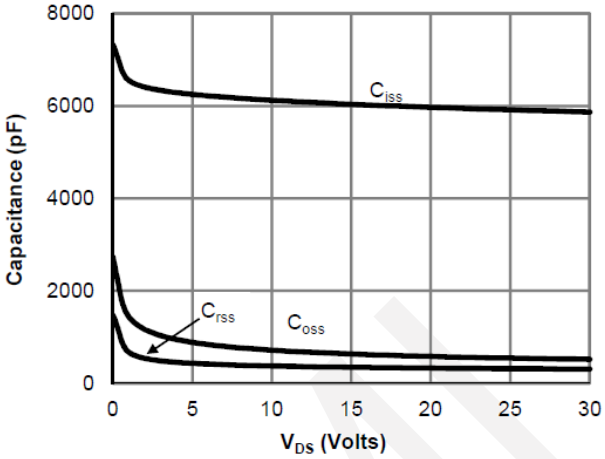
On-Resistance vs. Gate-Source Voltage



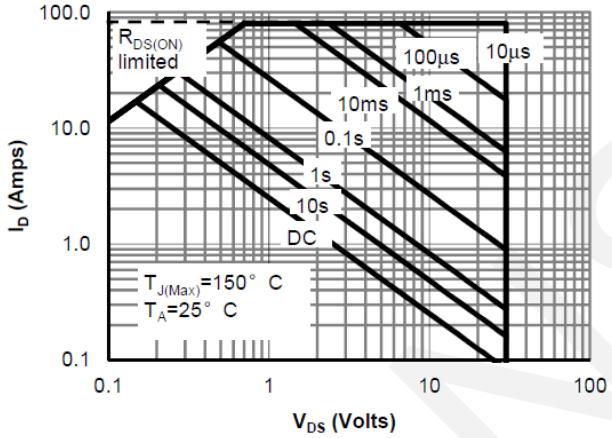
Body-Diode Characteristics



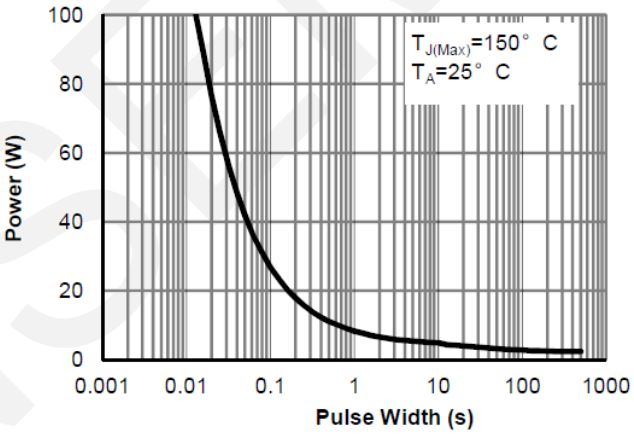
Gate-Charge Characteristics



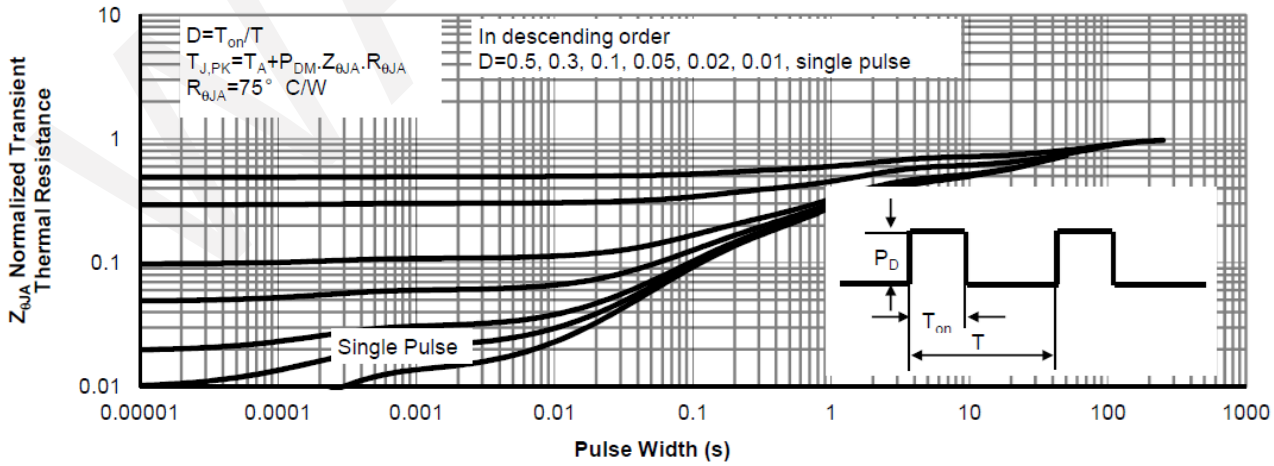
Capacitance Characteristics



Maximum Forward Biased Safe Operating Area

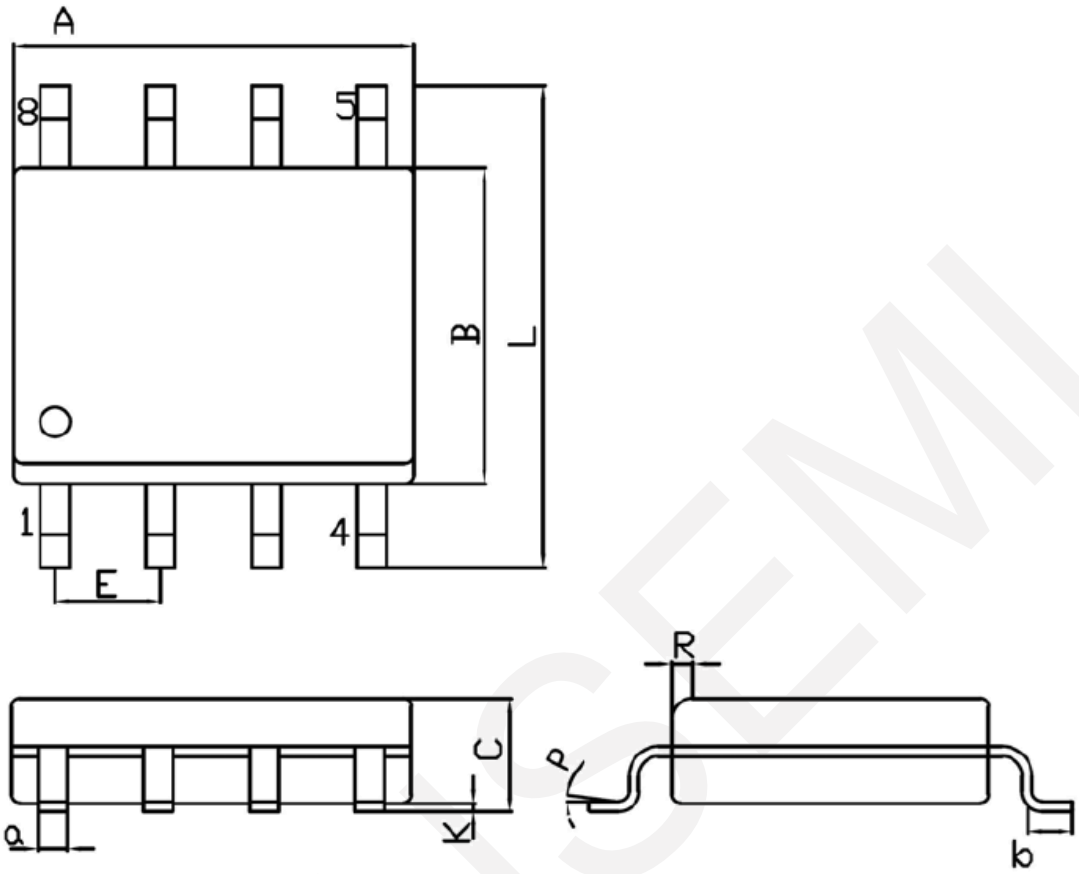


Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25

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