

P-channel Enhancement Mode Power MOSFET

Features

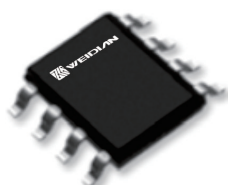
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- 100% UIS TESTED!
- 100% ΔV_{DS} TESTED!

Applications

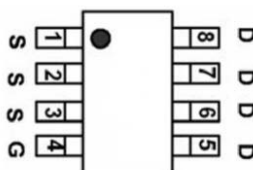
- Load Switch
- PWM Application
- Power Management

Product Summary

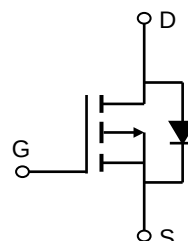
Parameters	Value	Unit
V_{DSS}	-30	V
$V_{GS(th)_{Typ}}$	-1.5	V
$I_D(@V_{GS}=-10V)$	-35	A
$R_{DS(ON)_{Typ}} @V_{GS}=-10V$	7.2	m Ω
$R_{DS(ON)_{Typ}} @V_{GS}=-4.5V$	10	m Ω



SOP8 Top View



Marking



Schematic Diagram

Ordering Information

Device	Marking	Package	Packing	Reel Size	Tape Width	Reel (pcs)
ZK30P35S	30P35	SOP8	Reel	N/A	N/A	4000

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^{\circ}\text{C}$	I_D	-35	A
	$T_C = 70^{\circ}\text{C}$		-32	
Pulsed Drain Current		I_{DM}	-60	A
Single Pulsed Avalanche Energy		E_{AS}	85	mJ
Power Dissipation		P_D	3.1	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	32	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^{\circ}\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D = -250uA	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -30V, V _{GS} =0V			-1.0	μA
Gate-body leakage current	I _{GSS}	V _{DS} = 0V, V _{GS} =±20V			±100	nA
On characteristics ④						
Gate-threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-1.5	-2.5	V
Static drain-source on-sate resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-12A		7.2	9	mΩ
		V _{GS} =-4.5V, I _D =-8A		10.0	12.5	mΩ
Dynamic characteristics ④ ⑤						
Input capacitance	C _{iss}	V _{DS} =-15V,V _{GS} =0V f =1MHz		2252		pF
Output capacitance	C _{oss}			306		
Reverse transfer capacitance	C _{rss}			222		
Gate resistance	R _g	f =1MHz		11.7		Ω
Switching characteristics ④ ⑤						
Total gate charge	Q _g	V _{GS} =0 to -10V V _{DS} =-15V, I _D =-12A		30		nC
Gate-source charge	Q _{gs}			4.6		
Gate-drain charge	Q _{gd}			10		
Turn-on delay time	t _{d(on)}	V _{DS} =-15V,R _L =1.25Ω V _{GS} =-10V,R _{GEN} =3Ω		11		ns
Turn-on rise time	t _r			9.4		
Turn-off delay time	t _{d(off)}			24		
Turn-off fall time	t _f			12		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage	V _{SD} ④	V _{GS} =0V, I _S =-30A			-1.2	V
Continuous drain-source diode forward current	I _S ①				-12	A
Pulsed drain-source diode forward current	I _{SM} ②				-48	A
Reverse recovery time	t _{rr}	di/dt = 100A/μs, I _F = -12A		30		ns
Reverse recovery charge	Q _{rr}			22		nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting $T_J = 25^{\circ}\text{C}$, $V_{DD} = -15V$, $V_G = -10V$, $R_G = 25\Omega$, $L = 0.5mH$, $I_{AS} = -18A$.
3. Exclusion zone is 3mm from the wafer edge. CP yield do not guarantee from 3mm wafer edge.
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $< 2\%$.

Typical Performance Characteristics

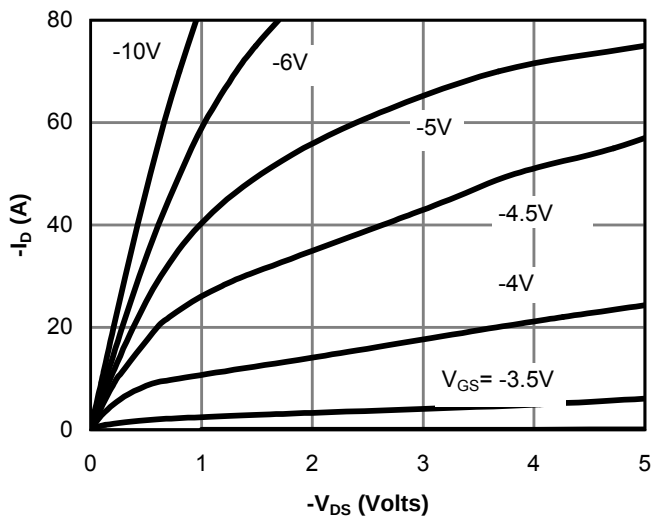


Figure 1: On-Region Characteristics

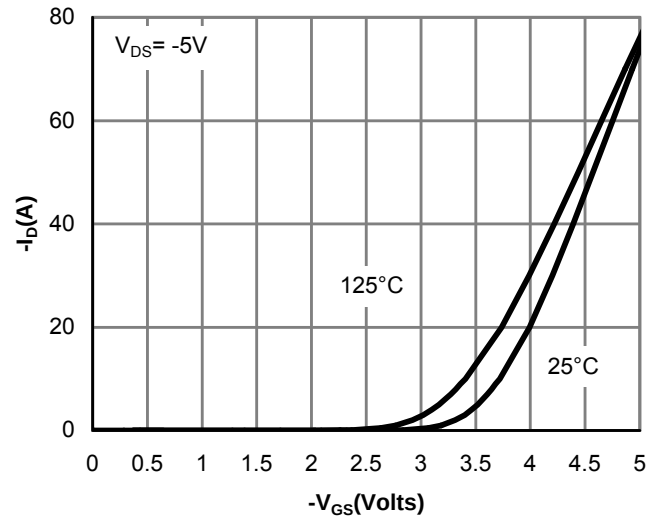


Figure 2: Transfer Characteristics

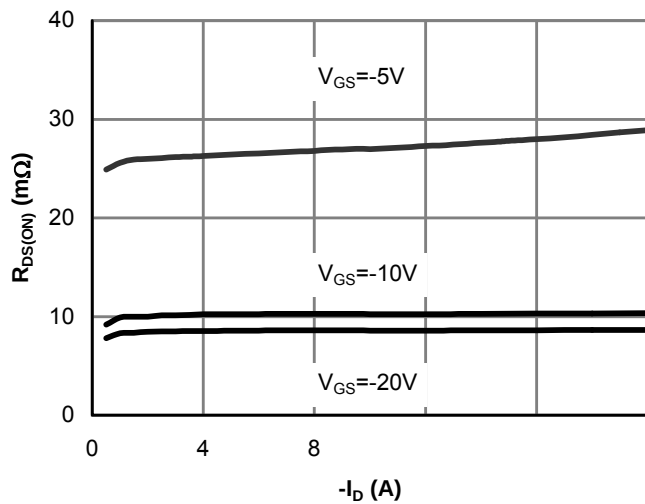


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

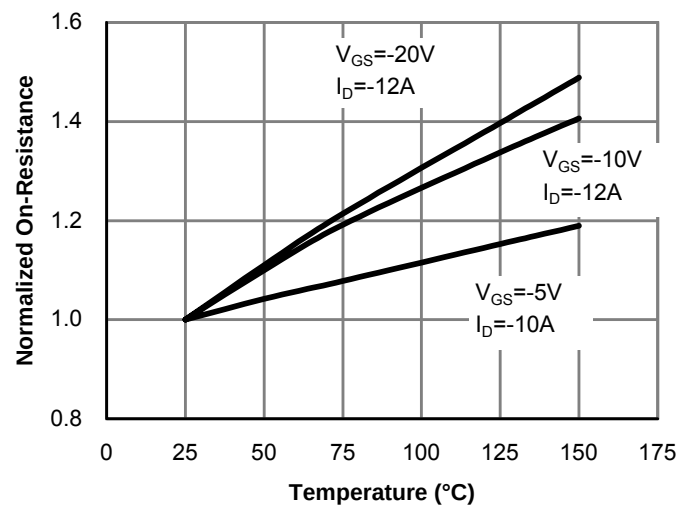


Figure 4: On-Resistance vs. Junction Temperature

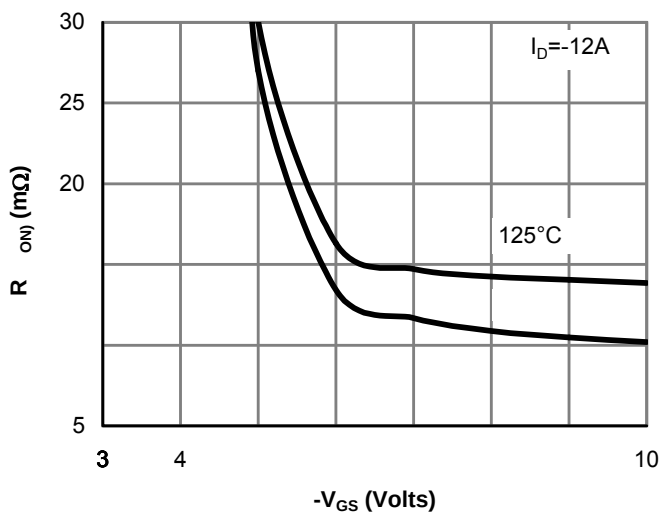


Figure 5: On-Resistance vs. Gate-Source Voltage

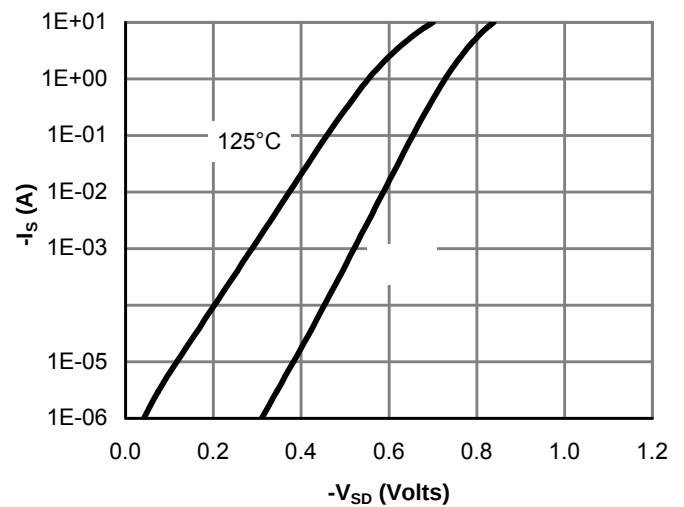
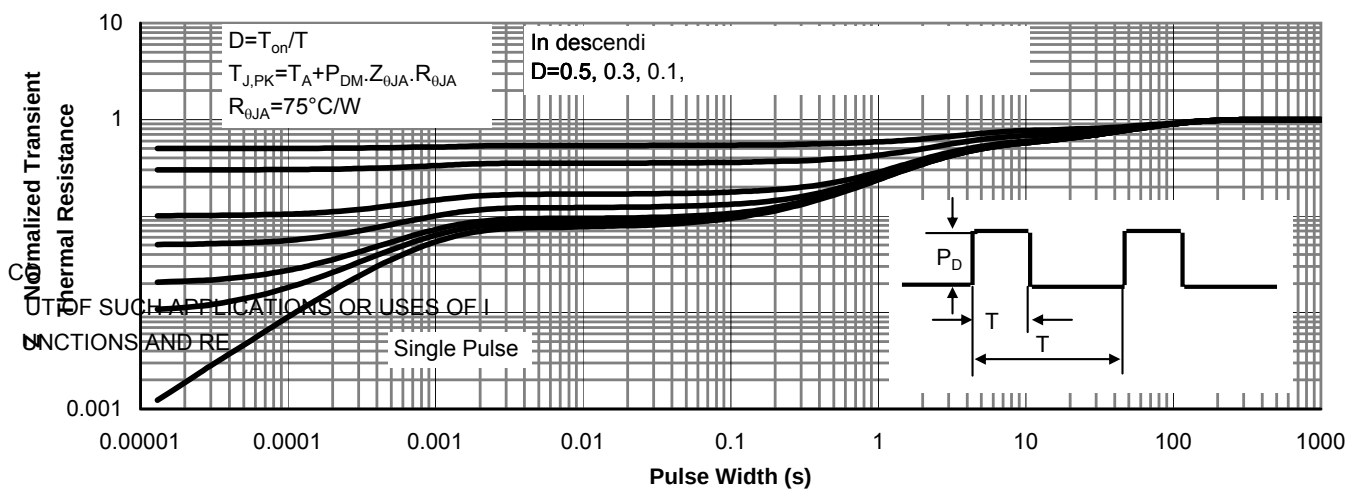
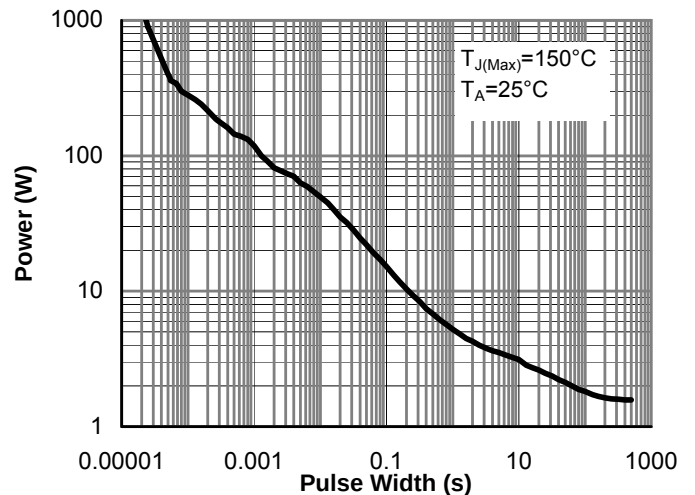
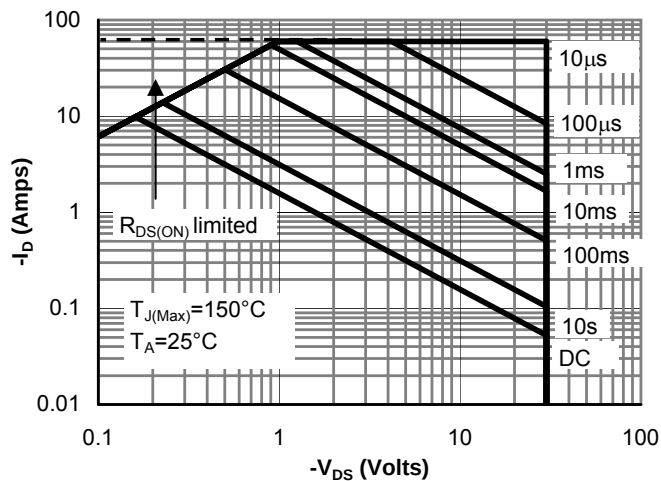
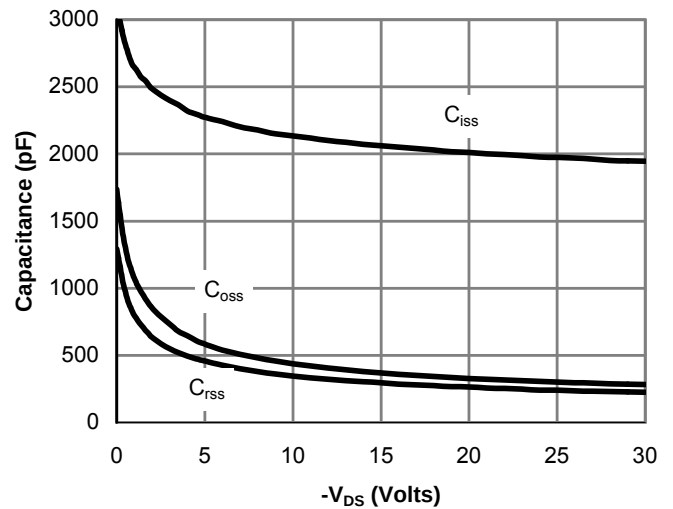
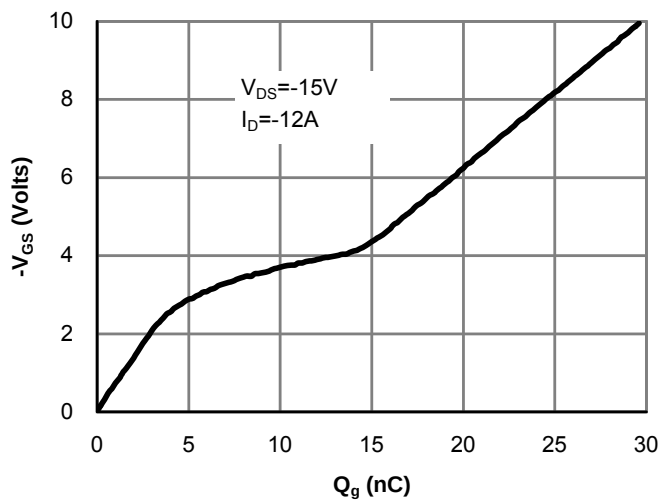
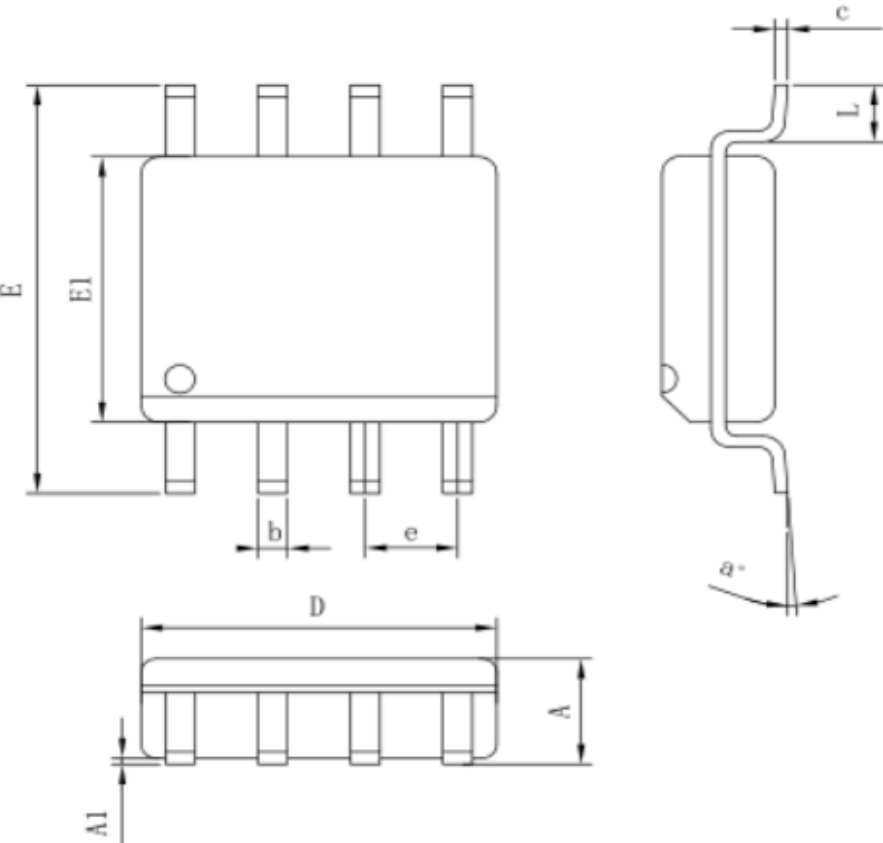


Figure 6: Body-Diode Characteristics

Typical Performance Characteristics



Package Mechanical Data(SOP-8)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	--	--	1.75
A1	0.10	--	0.23
b	0.35	--	0.48
c	0.19	--	0.25
D	4.70	4.90	5.00
E	5.80	6.00	6.20
E1	3.70	3.90	4.10
e	1.27BSC		
L	0.50	--	0.80
a°	0°	--	8°