

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	130mΩ@10V	3.5A
	190mΩ@4.5V	

Feature

- Advanced Split Gate Trench Technology
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

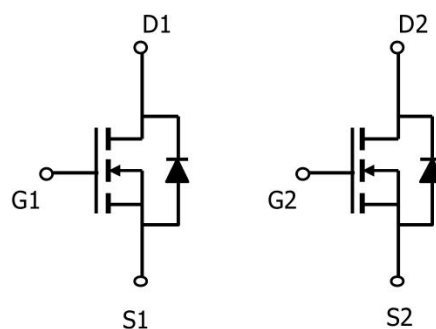
- DC/DC Converter
- LED Backlighting
- Motor Control

Package

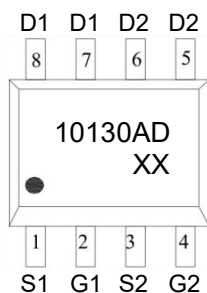


SOP-8

Circuit diagram



Marking



Absolute maximum ratings ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_A=25^{\circ}\text{C}$)	I_D	3.5	A
Continuous Drain Current ($T_A=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	2.2	A
Pulsed Drain Current ¹⁾	I_{DM}	14	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	7.2	mJ
Power Dissipation ($T_A=25^{\circ}\text{C}$)	P_D	3.1	W
Thermal Resistance Junction to Ambient ³⁾	$R_{\theta JA}$	40.3	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.65	2.5	V
Drain-source on-resistance ⁴⁾	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$		95	130	mΩ
		$V_{GS}=4.5V, I_D=1A$		135	190	
Dynamic characteristics ⁵⁾						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		200		pF
Output Capacitance	C_{oss}			30		
Reverse Transfer Capacitance	C_{rss}			3		
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=3A$		4		nC
Gate-Source Charge	Q_{gs}			0.9		
Gate-Drain Charge	Q_{gd}			1.1		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=50V, V_{GS}=10V, I_D=3A$ $R_G=3\Omega$		13		nS
Turn-on rise time	t_r			19		
Turn-off delay time	$t_{d(off)}$			20		
Turn-off fall time	t_f			28		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				3.5	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=3A$			1.2	V

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) E_{AS} condition: Starting $T_J=25^{\circ}\text{C}$, $V_{DS}=25\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.4\text{mH}$, $I_{AS}=6\text{A}$.
- 3) $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
- 4) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

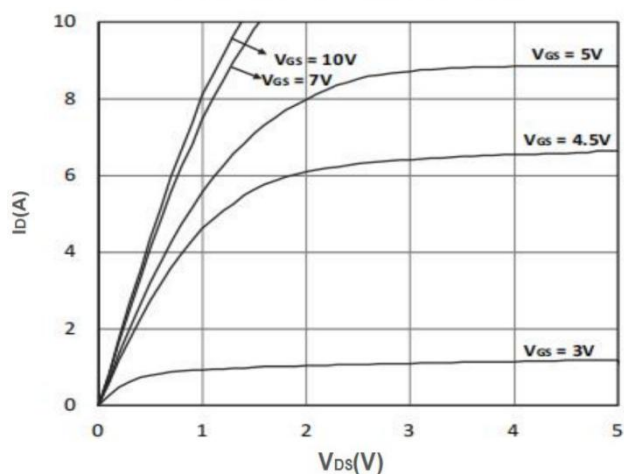


Figure 2: Typical Transfer Characteristics

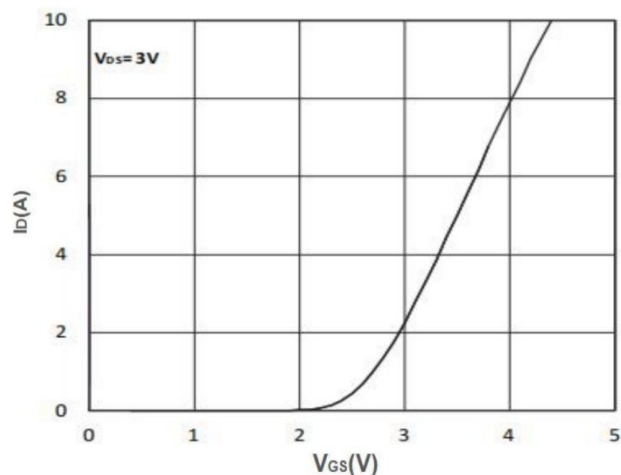


Figure 3: On-resistance vs. Drain Current

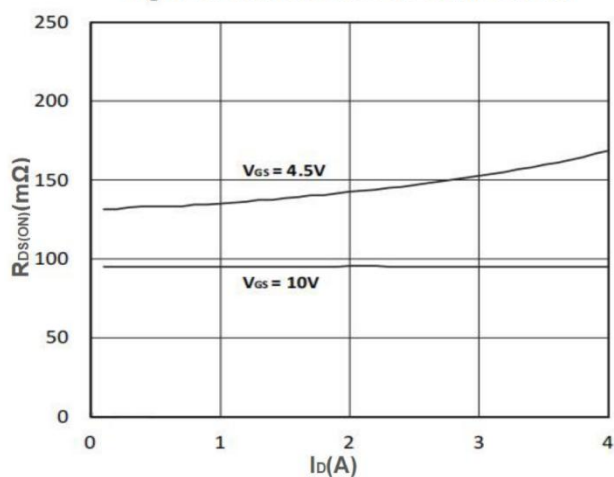


Figure 4: Body Diode Characteristics

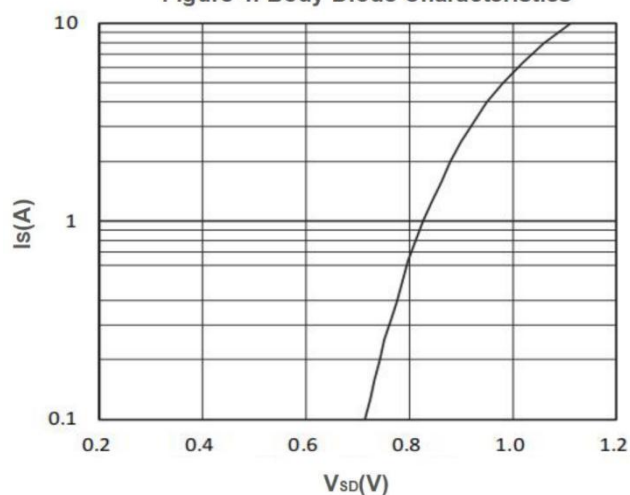


Figure 5: Gate Charge Characteristics

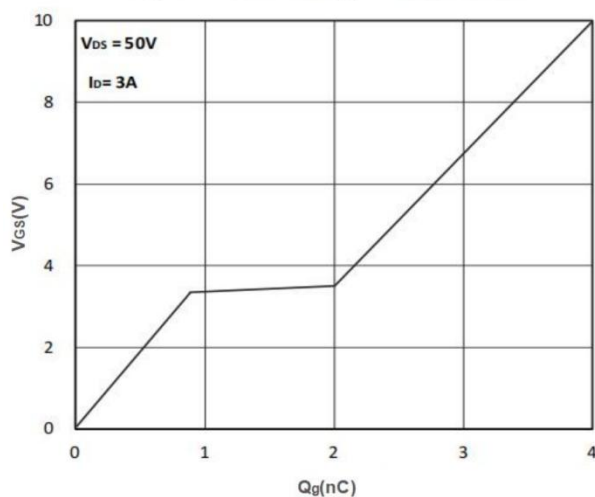
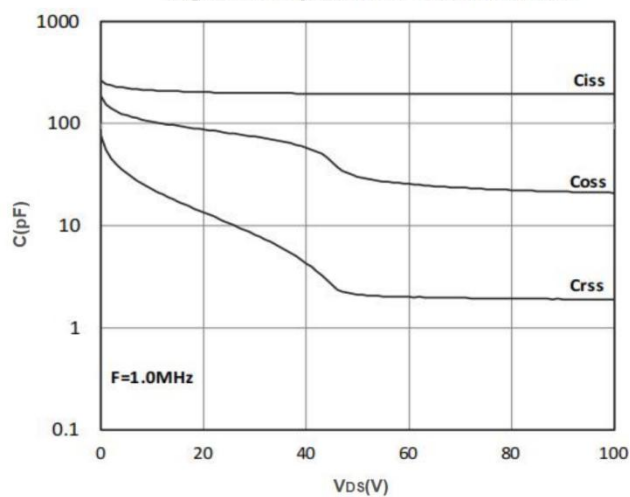


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

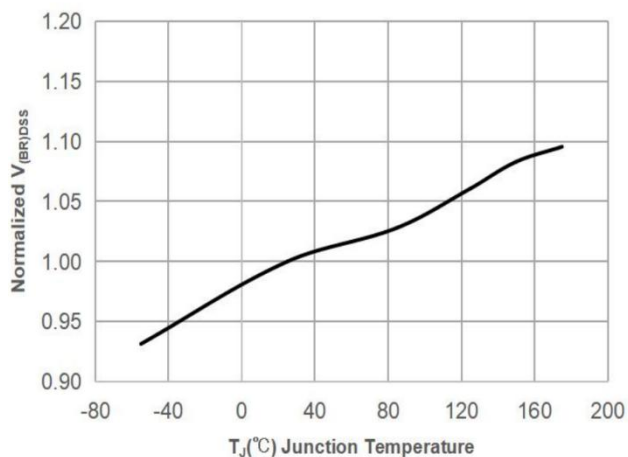


Figure 8: Normalized on Resistance vs. Junction Temperature

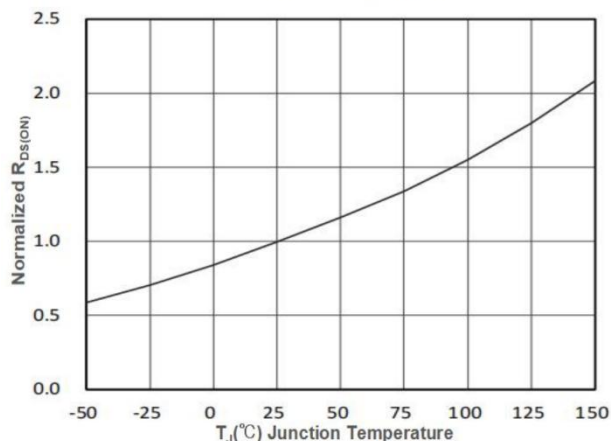


Figure 9: Maximum Safe Operating Area

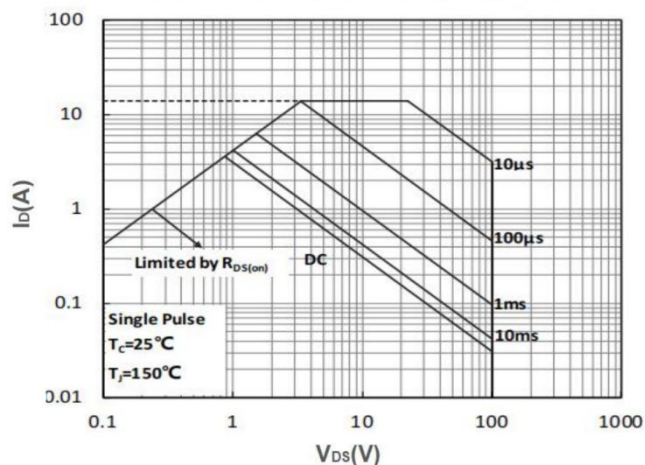


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

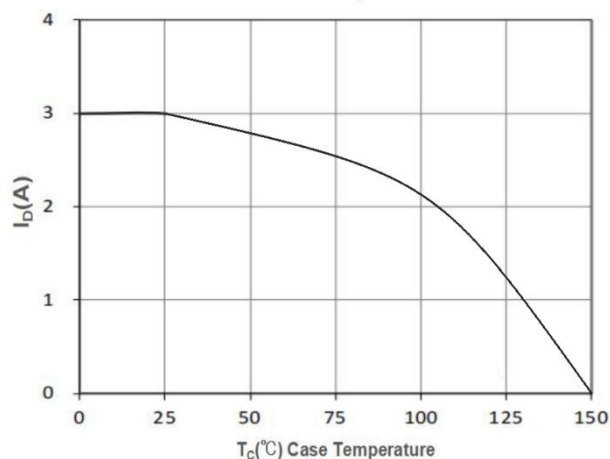


Figure 11: Normalized Maximum Transient Thermal Impedance

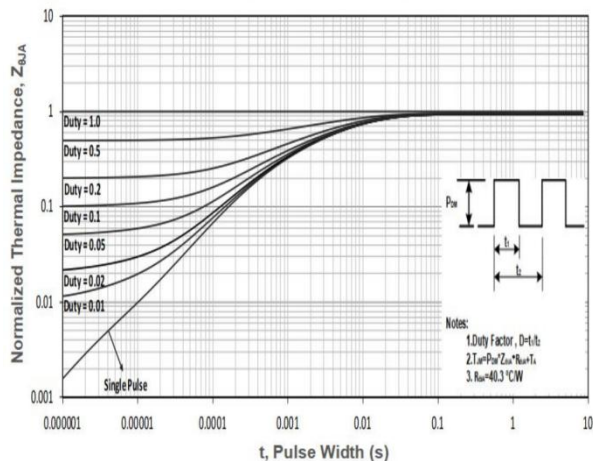
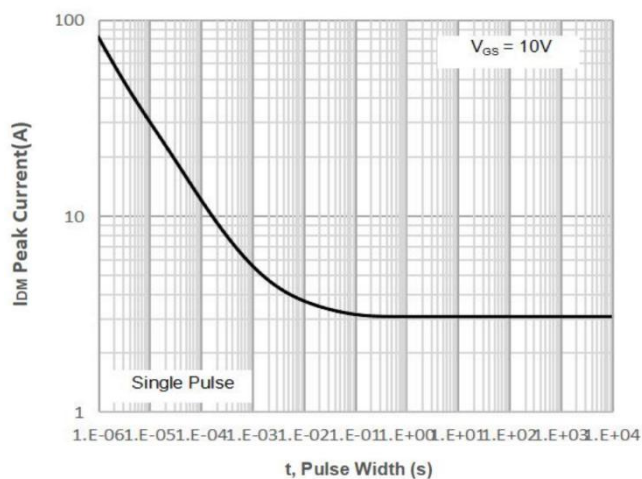
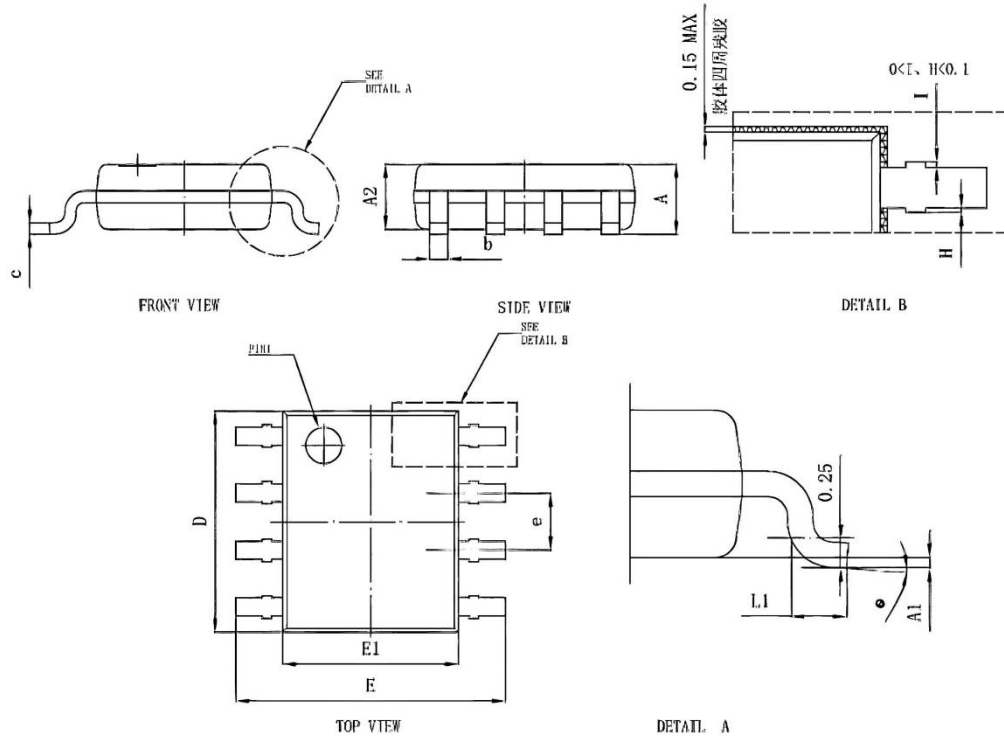


Figure 12: Peak Current Capacity



SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A1	0.050	0.250	0.002	0.010
A2	1.425	1.475	0.056	0.058
b	0.300	0.500	0.012	0.020
c	0.150	0.250	0.006	0.010
D	4.800	5.200	0.189	0.205
E	5.800	6.200	0.228	0.244
E1	3.800	4.200	0.150	0.165
e	1.270 BSC.		0.050 BSC.	
L1	0.400	0.800	0.016	0.031
H, I	0.000	0.100	0.000	0.004
θ	0°	8°	0°	8°