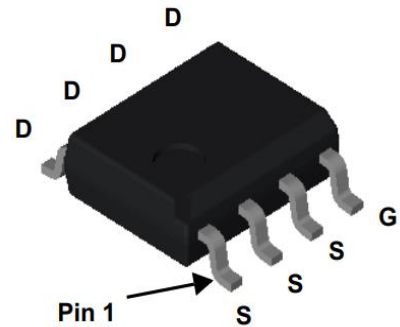


WCN770N15S

Single N-Channel, 150V, 4.5A, Power MOSFET

<https://www.omnivision-group.com>

V_{DS} (V)	Max. $R_{DS(on)}$ (m Ω)
150V	63 @ $V_{GS}=10V, I_D=4.1A$
	76 @ $V_{GS}=6V, I_D=3.3A$

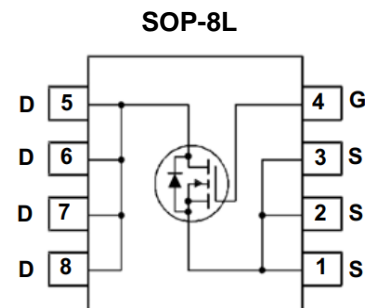


Descriptions

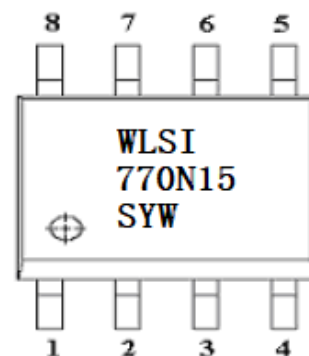
This N-Channel MOSFET is produced using advanced Split Gate Trench process that has been optimized for R_{dson} , switching performance and ruggedness.

Features

- Split Gate Trench Technology
- High power and current handing capability in a widely used surface mount package
- Excellent ON resistance
- 100% UIS Tested
- 100% Rg Tested



Pin configuration (Top view)



770N15 = Device Code

Y = Year

W = Week(A~z)

Marking

Order information

Device	Package	Shipping
WCN770N15S	SOP-8L	4000/Tape&Reel

Applications

- DC/DC converters
- Primary Switch for Flyback structure POE Power
- High Voltage Synchronous Rectifier

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit	
Drain-Source Voltage	V_{DS}	150	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ^b	I_D	$T_A=25^{\circ}\text{C}$	4.5	A
		$T_A=70^{\circ}\text{C}$	3.6	
Pulsed Drain Current ^c	I_{DM}	25		
Single Pulse Avalanche Energy ^e	E_{AS}	40.5	mJ	
Maximum Power Dissipation ^b	P_{DSM}	$T_A=25^{\circ}\text{C}$	3	W
		$T_A=70^{\circ}\text{C}$	2	
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$	

Thermal resistance ratings

Single Operation					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	33	43	$t \leq 10 \text{ s}$	$^{\circ}\text{C/W}$
				Steady State	
Junction-to-Lead Thermal Resistance	$R_{\theta JL}$	17	21	Steady State	

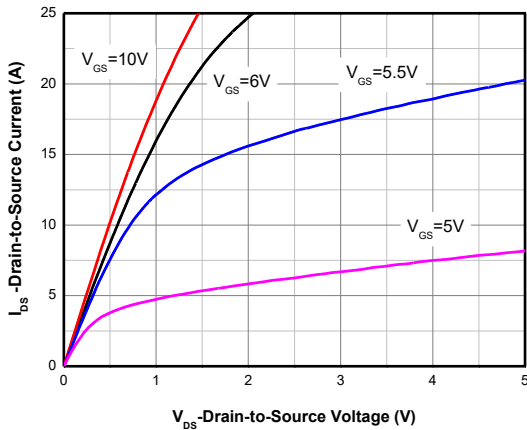
Note:

- FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area)
- The maximum power dissipation P_{DSM} is based on Junction-to-Ambient thermal resistance $R_{\theta JA}$ $t \leq 10\text{s}$ value and the $T_{J(MAX)}=150^{\circ}\text{C}$. The value is only for reference, any application depends on the user's specific board design.
- Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^{\circ}\text{C}$, the maximum allowed junction temperature of 150°C .
- The static characteristics are obtained using ~380us pulses, duty cycle ~1%.
- Starting $T_J=25^{\circ}\text{C}$, $L=1\text{mH}$, $I_{AS}=9\text{A}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$.

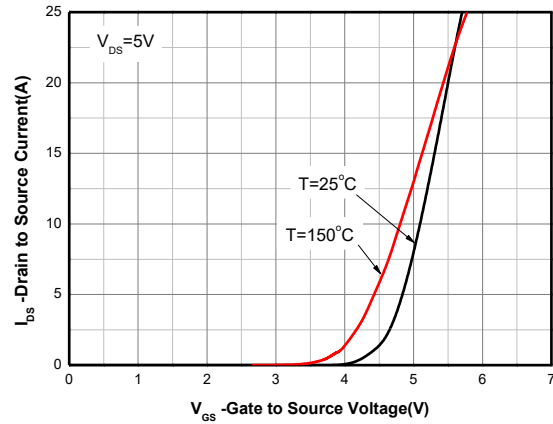
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	150			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 150V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	2	3.5	4	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 4.1A		50.2	63	mΩ
		V _{GS} = 6V, I _D = 3.3A		57.7	76	
Forward Transconductance	g _{FS}	V _{DS} = 10 V, I _D = 4.1A		6		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, F = 1.0MHz, V _{DS} = 75 V		874		pF
Output Capacitance	C _{OSS}			61		
Reverse Transfer Capacitance	C _{RSS}			3		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DD} = 75 V, I _D = 4.1 A		14.5		nC
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 6 V, V _{DD} = 75 V, I _D = 4.1 A		9.2		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 10 V, V _{DD} = 75 V, I _D = 4.1 A		5.3		
Gate-to-Drain Charge	Q _{GD}			2.2		
Gate Resistance	R _g	F=1MHz		2.5		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DD} = 75 V, I _D = 4.1A, R _G = 6Ω		9.5		nS
Rise Time	tr			3.6		
Turn-Off Delay Time	td(OFF)			16.0		
Fall Time	tf			5.4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 2A		0.76	1.2	V
Reverse Recovery Time	trr	I _F = 4.1A, di/dt = 100A/us		71		nS
Reverse Recovery Charge	Q _{rr}				76	

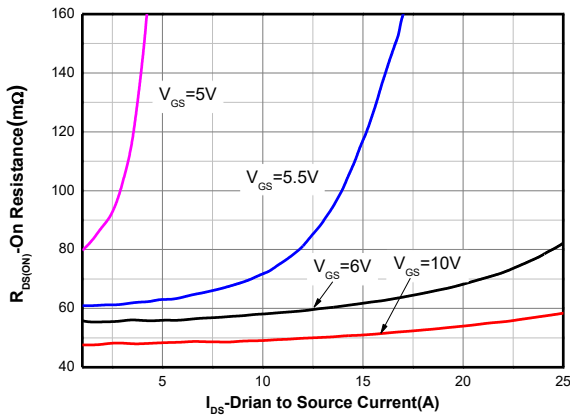
Typical Characteristics (Ta=25°C, unless otherwise noted)



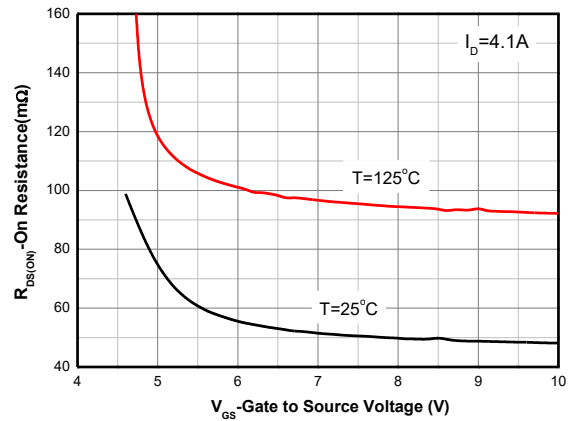
Output Characteristics ^d



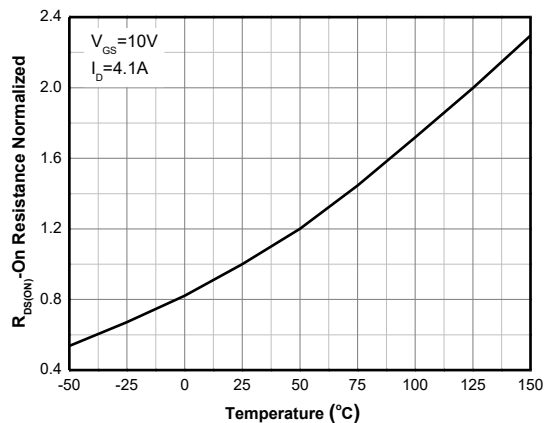
Transfer Characteristics ^d



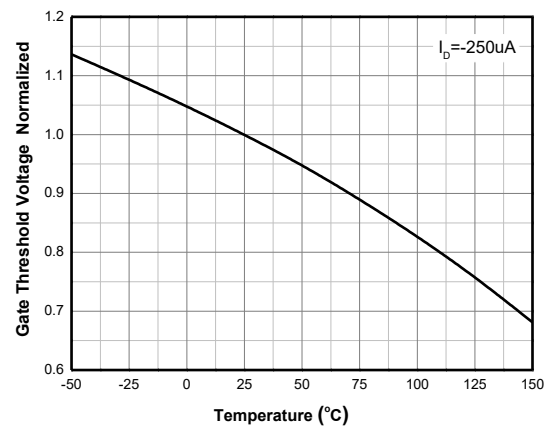
On-Resistance vs. Drain Current ^d



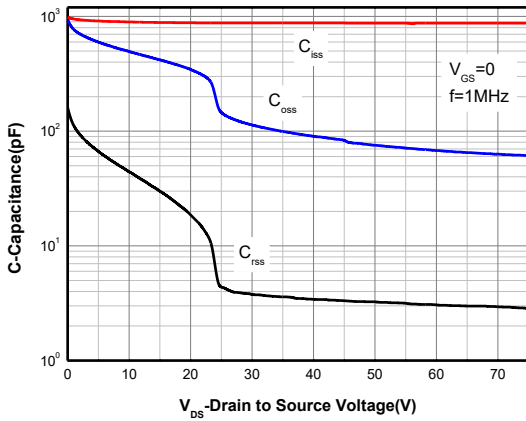
On-Resistance vs. Gate-to-Source Voltage ^d



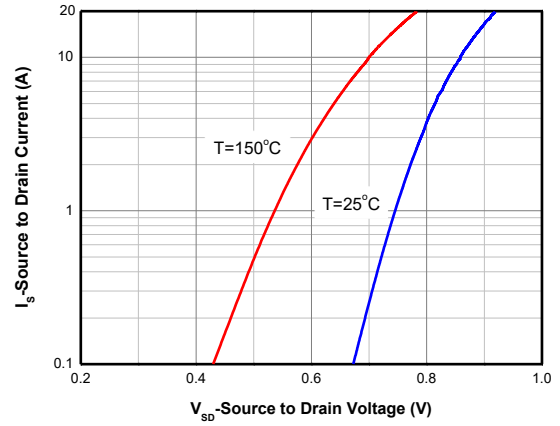
On-Resistance vs. Junction Temperature ^d



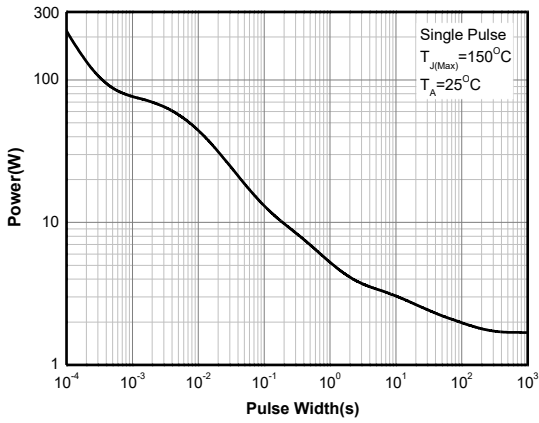
Threshold Voltage vs. Temperature



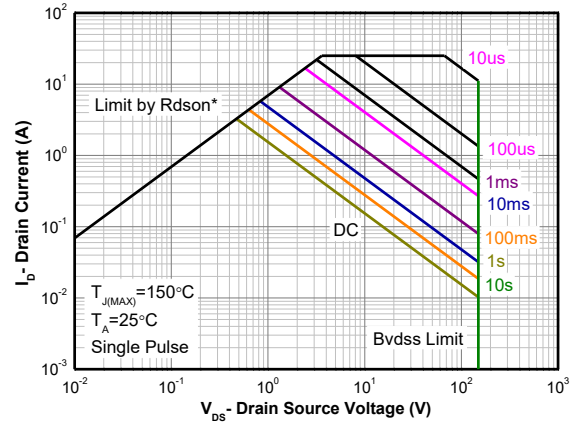
Capacitance



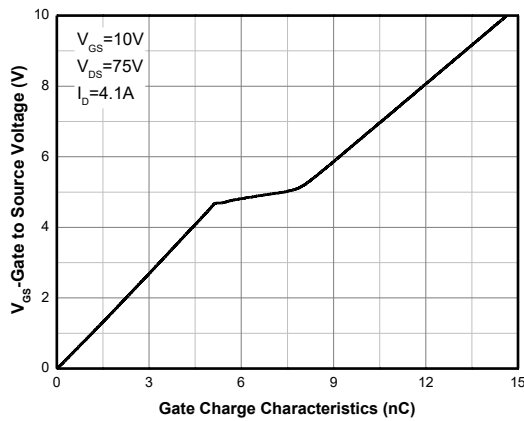
Body Diode Forward Voltage^d



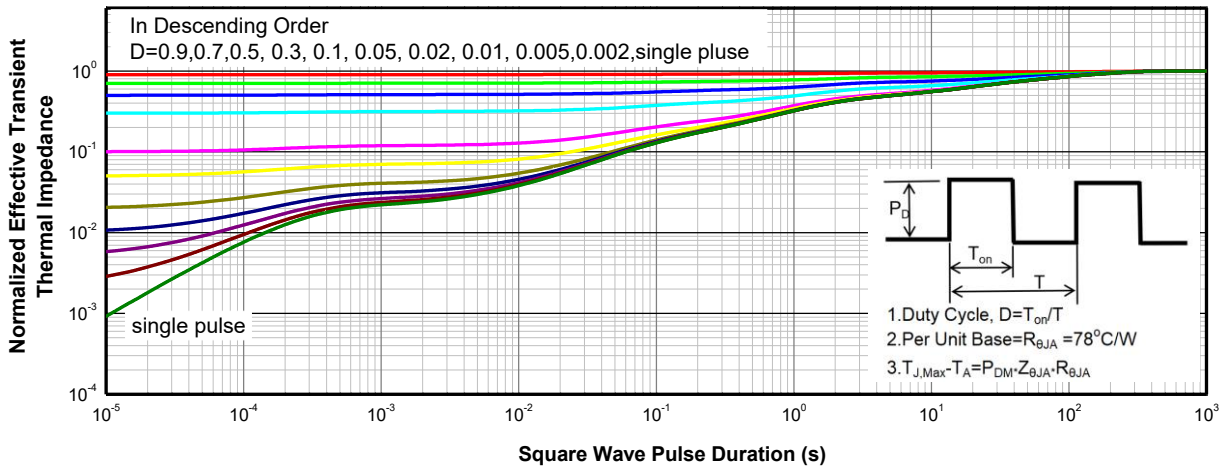
Single Pulse power



Safe Operating Area



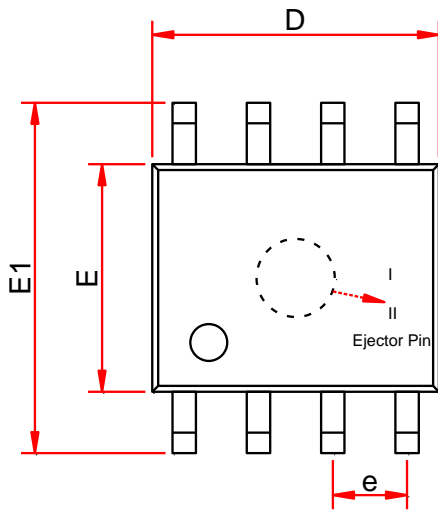
Gate Charge Characteristics



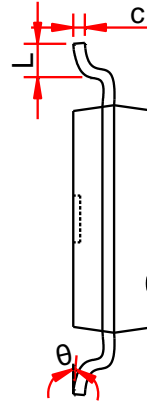
Transient thermal response (Junction-to-Ambient)

Package outline dimensions

SOP-8L




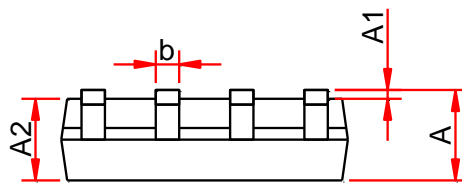
TOP VIEW



SIDE VIEW

I) NA

II) 

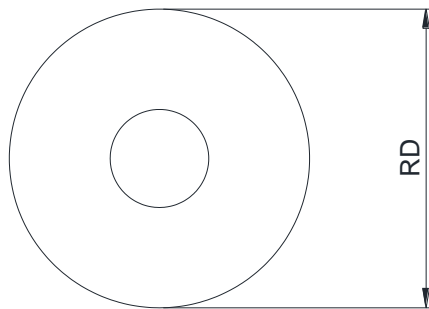


SIDE VIEW

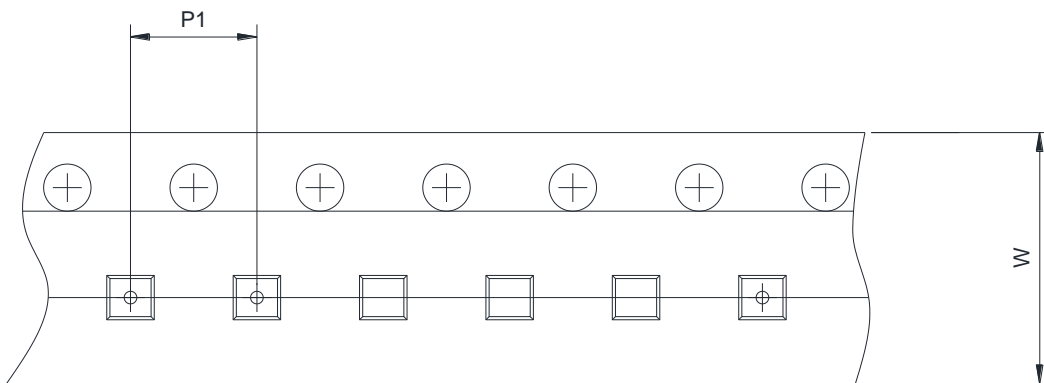
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	1.35	1.55	1.75
A1	0.05	0.15	0.25
A2	1.25	1.40	1.65
b	0.33	-	0.51
c	0.15	-	0.26
D	4.70	4.90	5.10
E	3.70	3.90	4.10
E1	5.80	6.00	6.20
e	1.27BSC		
L	0.40	-	1.27
θ	0°	-	8°

Package outline dimensions

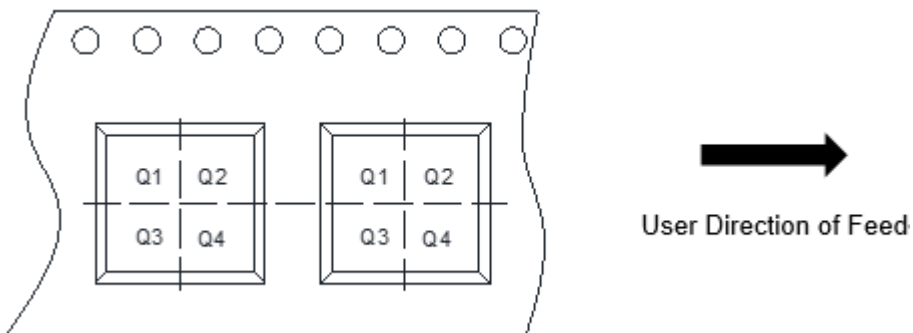
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	<input type="checkbox"/> 7inch	<input checked="" type="checkbox"/> 13inch		
W	Overall width of the carrier tape	<input type="checkbox"/> 8mm	<input checked="" type="checkbox"/> 12mm		
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input type="checkbox"/> 4mm	<input checked="" type="checkbox"/> 8mm	
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input type="checkbox"/> Q2	<input type="checkbox"/> Q3	<input type="checkbox"/> Q4