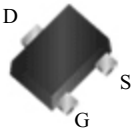
WNM2030

Single N-Channel, 20V, 0.95A, Power MOSFET

Http://www.sh-willsemi.com

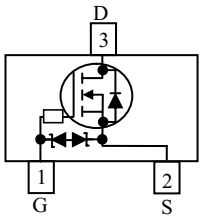
V_{DS} (V)	Rds(on) (Ω)
20	0.210@ V_{GS}=4.5V
	0.250@ V_{GS}=2.5V
	0.305@ V_{GS}=1.8V
ESD Protected	



SOT-723

Descriptions

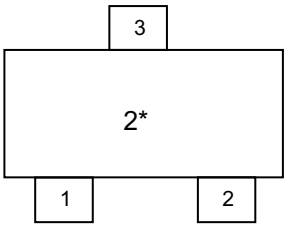
The WNM2030 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM2030 is Pb-free and Halogen-free.



Pin configuration (Top view)

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-723



2 = Device Code
* = Month (A~Z)

Marking

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Order information

Device	Package	Shipping
WNM2030-3/TR	SOT-723	8000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±6		
Continuous Drain Current [a]	T_A=25°C	I_D	0.95	0.88	A
	T_A=70°C		0.76	0.71	
Maximum Power Dissipation [a]	T_A=25°C	P_D	0.43	0.37	W
	T_A=70°C		0.28	0.24	
Continuous Drain Current [b]	T_A=25°C	I_D	0.80	0.75	A
	T_A=70°C		0.64	0.60	
Maximum Power Dissipation [b]	T_A=25°C	P_D	0.31	0.27	W
	T_A=70°C		0.20	0.17	
Pulsed Drain Current [c]		I_{DM}	1.5		A
Operating Junction Temperature		T_J	150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	225	285	°C/W
	Steady State		270	330	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	330	400	
	Steady State		390	460	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	230	265	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

b Surface mounted on FR-4 board using minimum pad size, 1oz copper

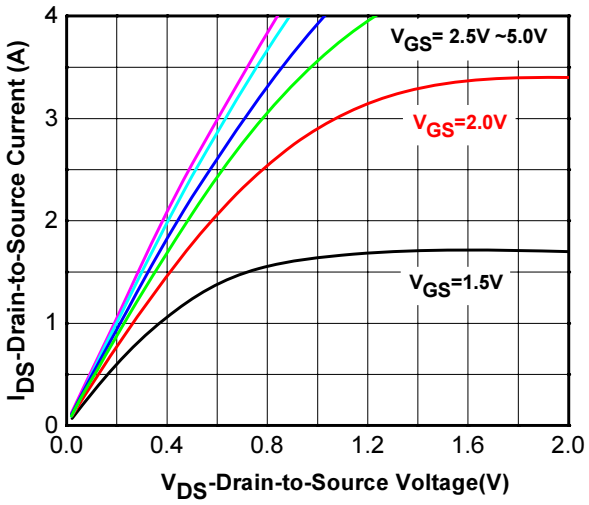
c Pulse width<380μs, Duty Cycle<2%

d Maximum junction temperature T_J=150°C.

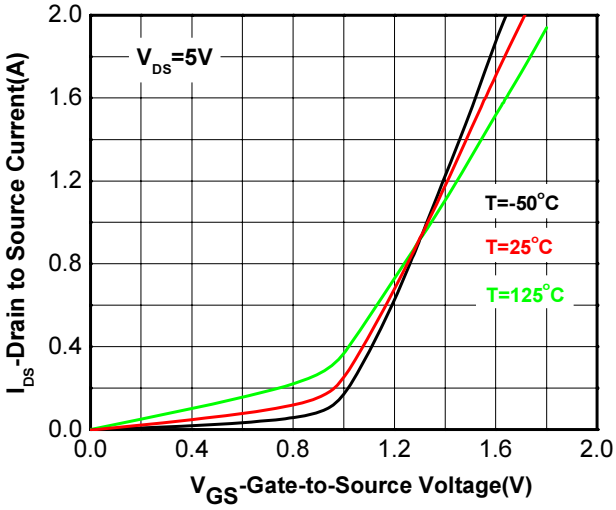
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±5V			±5	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.45	0.65	1.0	V
Drain-to-source On-resistance [b, c]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.55A		210	310	mΩ
		V_{GS} = 2.5V, I_D = 0.50A		250	360	
		V_{GS} = 1.8V, I_D = 0.35A		305	460	
CAPACITANCES, CHARGES						
Input Capacitance	C_{ISS}	V_{GS} = 0 V,		50		pF
Output Capacitance	C_{OSS}	f = 100KHz,		13		
Reverse Transfer Capacitance	C_{RSS}	V_{DS} = 10 V		8		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V, I_D = 0.55A		1.15		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.06		
Gate-to-Source Charge	Q_{GS}			0.15		
Gate-to-Drain Charge	Q_{GD}			0.23		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D=0.55 Ω, R_G=6 Ω		22		ns
Rise Time	tr			80		
Turn-Off Delay Time	td(OFF)			700		
Fall Time	tf			380		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 0.35A	0.5	0.7	1.5	V

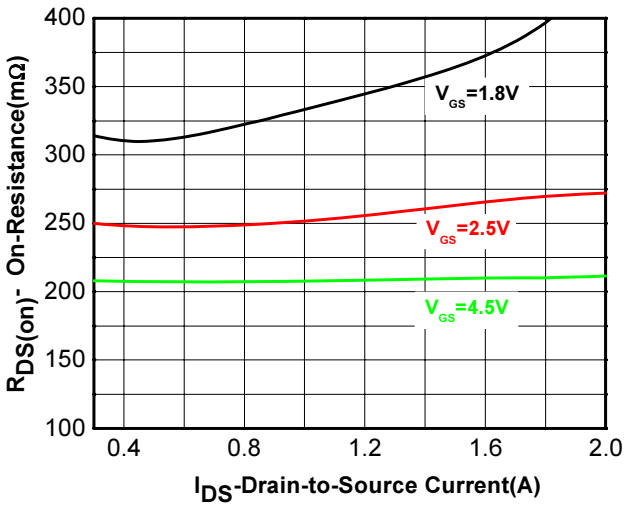
Typical Characteristics (Ta=25°C, unless otherwise noted)



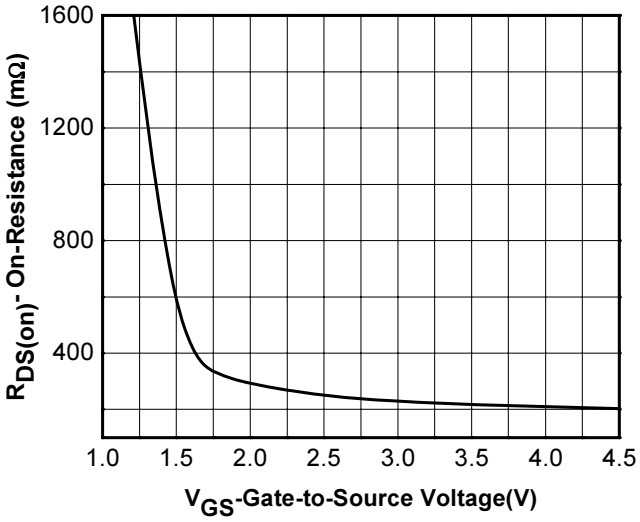
Output Characteristics



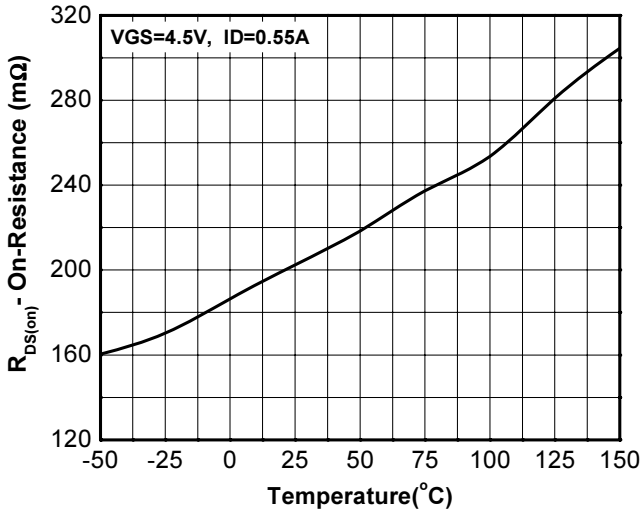
Transfer Characteristics



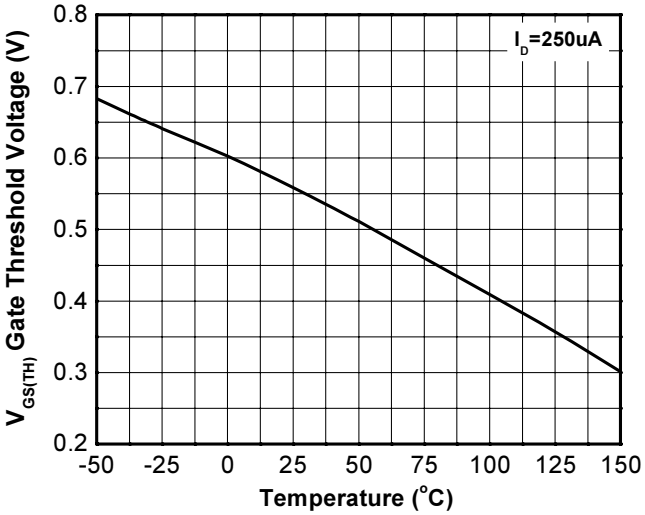
On Resistance vs. Drain Current



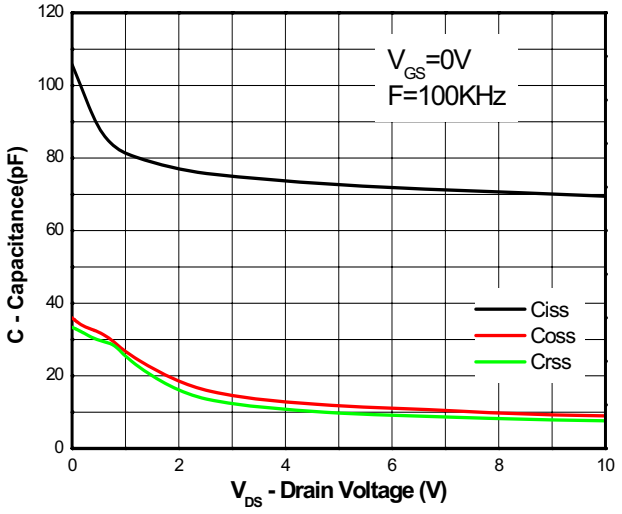
On Resistance vs. V_{GS} vs. Temperature



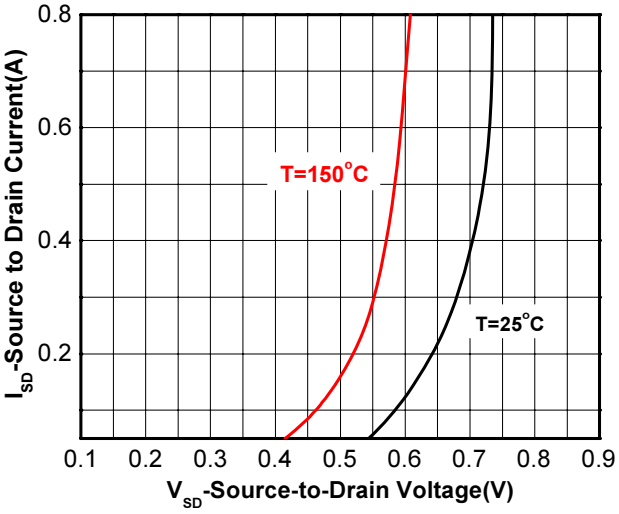
On Resistance vs. Junction Temperature



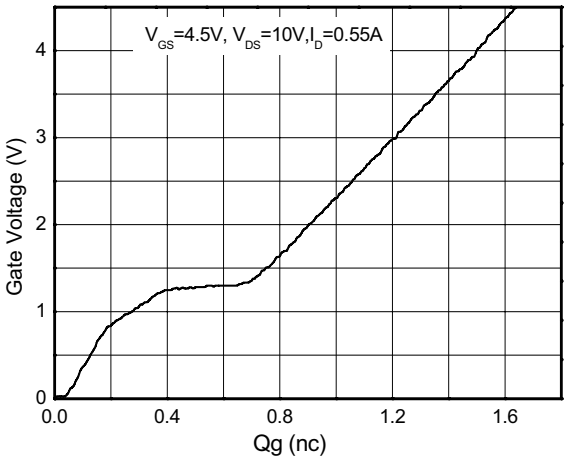
Threshold Voltage



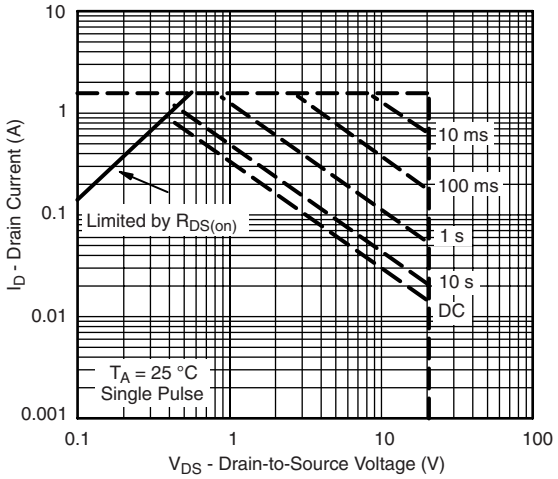
Capacitance



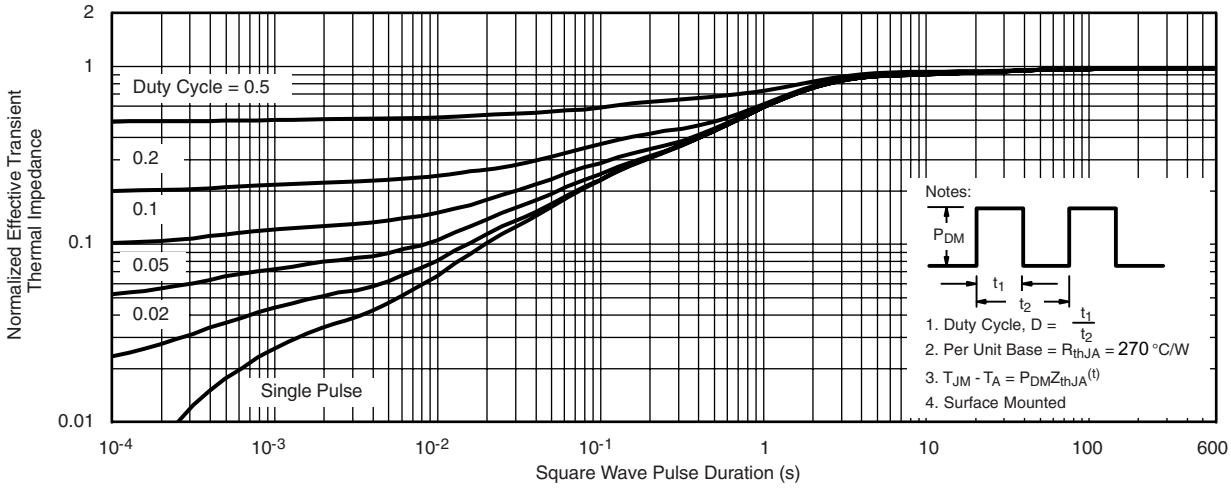
Body diode forward voltage



Gate Charge Characteristics



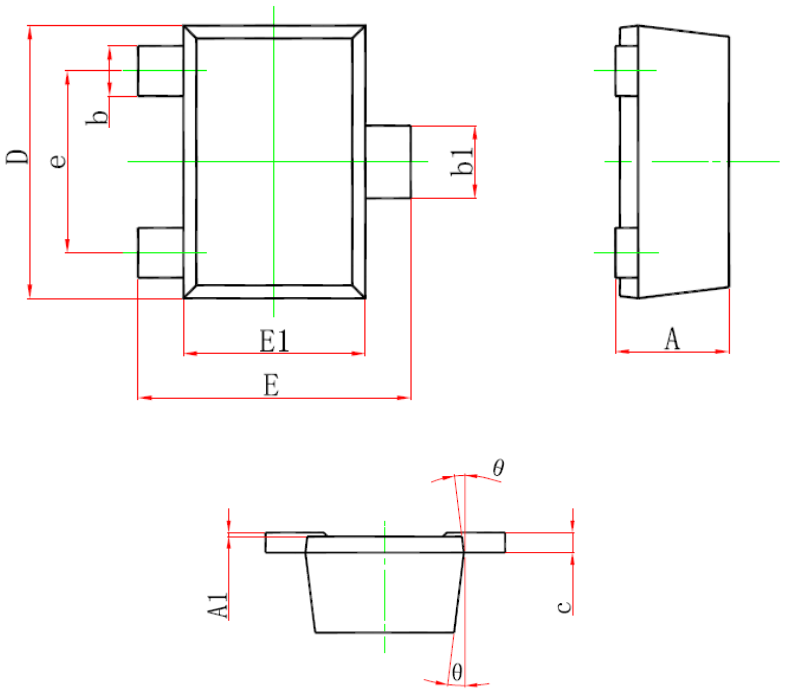
Safe operating power



Transient thermal response (Junction-to-Ambient)

Package outline dimensions

SOT-723



Symbol	Dimension in Millimeters	
	Min.	Max.
A		0.550
A1	0.000	0.050
b	0.170	0.270
b1	0.270	0.370
c		0.180
D	1.150	1.250
E	1.150	1.250
E1	0.750	0.850
e	0.800 TYP	
θ	7° REF.	