

General Description

The MOSFETs from WILLAS provide the best combination of fast switching, low on-resistance and cost-effectiveness.

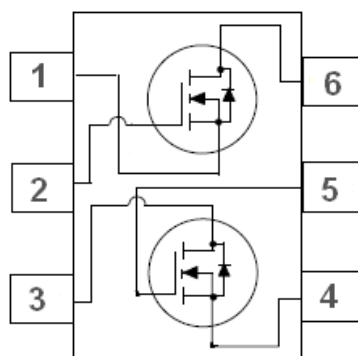
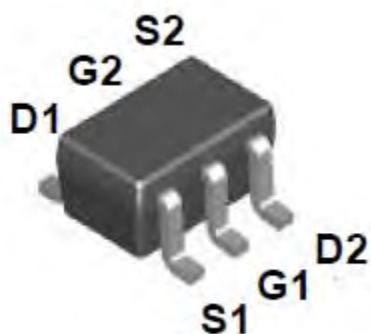
Features

- $R_{DS(ON)} = 0.45\Omega @ V_{GS} = 4.5V, I_D = 0.5A$
- $R_{DS(ON)} = 0.60\Omega @ V_{GS} = 2.7V, I_D = 0.2A$
- RoHS product for packing code suffix "G"
Halogen free product for packing code suffix "H"

Marking

Type number	Marking code
SE6303N	6303 \ r \ 6303

Pin configurations :SOT-363



Absolute Maximum Ratings

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	8	V
Drain/Output Current – Continuous – Pulsed	I_D	0.5	A
		1.5	
Maximum Power Dissipation	P_D	0.3	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

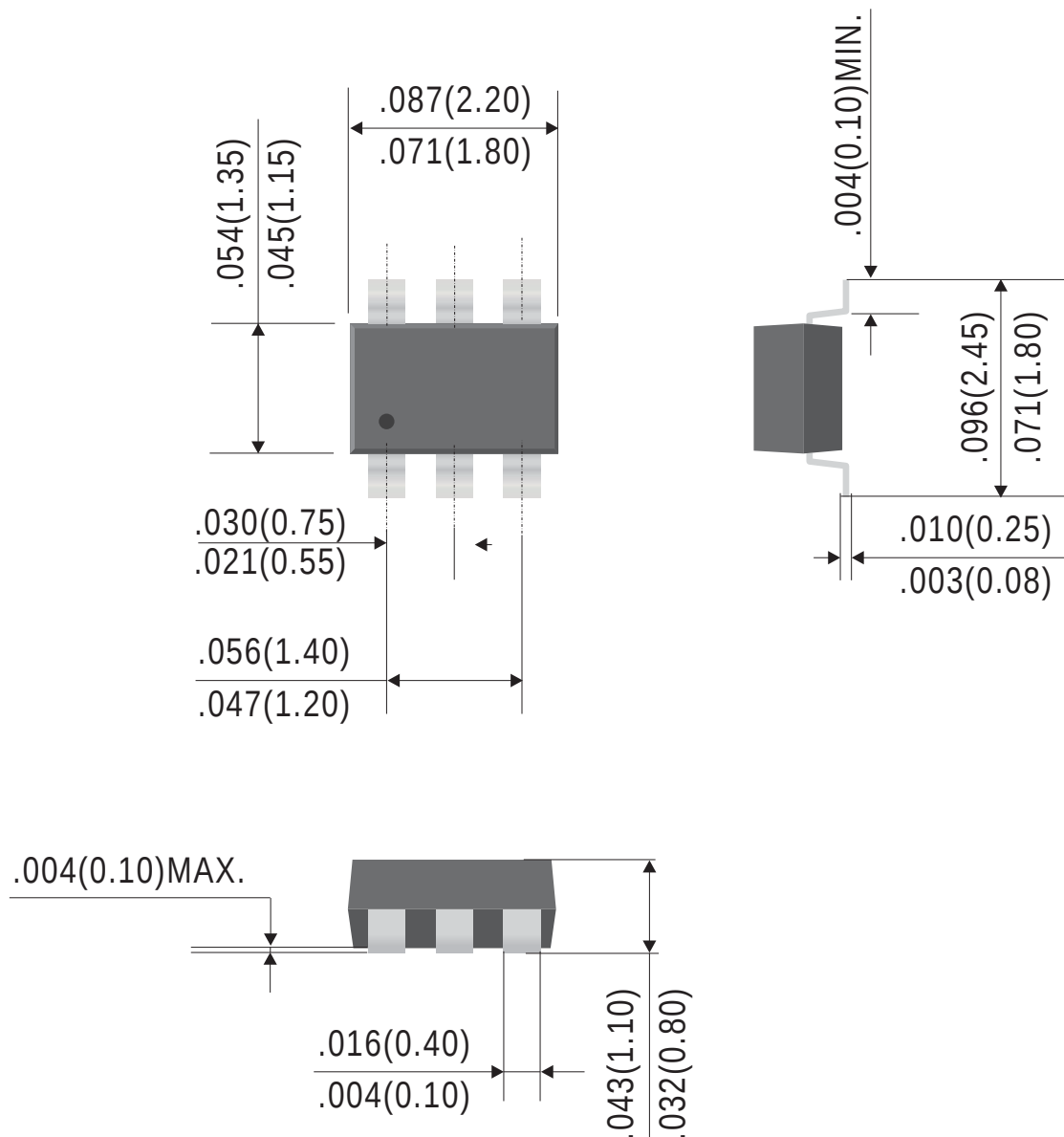
THERMAL CHARACTERISTICS			
Thermal Resistance, Junction-to-Ambient	R_{qJA}	415	$^{\circ}\text{C/W}$

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	20			V
ΔBV _{DS} / ΔT _J	Breakdown Voltage Temp. Coefficient	I _D = 250 μA, Referenced to 25°C		26		mV/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 20 V, V _{GS} = 0 V T _J = 55°C			1	μA
					10	μA
I _{GSS}	Gate - Body Leakage Current	V _{GS} = 8 V, V _{DS} = 0 V			10	μA
ON CHARACTERISTICS (Note 2)						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	0.60	0.7	1.5	V
ΔV _{GS(th)} / ΔT _J	Gate Threshold Voltage Temp.Coefficient	I _D = 250 μA, Referenced to 25°C		-2.6		mV/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 4.5 V, I _D = 0.5 A		0.34	0.45	Ω
		V _{GS} = 2.7 V, I _D = 0.2 A		0.44	0.6	
I _{D(ON)}	On-State Drain Current	V _{GS} = 2.7 V, V _{DS} = 5 V	0.5			A
g _{FS}	Forward Transconductance	V _{DS} = 5 V, I _D = 0.5 A		1.45		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 10 V, V _{GS} = 0 V, f = 1.0 MHz		50		pF
C _{oss}	Output Capacitance			28		pF
C _{rss}	Reverse Transfer Capacitance			9		pF
SWITCHING PARAMETERS						
tD(on)	Turn - On Delay Time	V _{DD} = 5 V, I _D = 0.5 A, V _{GS} = 4.5 V, R _{GEN} = 50 Ω		3	6	ns
tr	Turn - On Rise Time			8.5	18	ns
tD(off)	Turn - Off Delay Time			17	30	ns
tf	Turn - Off Fall Time			13	25	ns
Qg	Total Gate Charge	V _{DS} = 5 V, I _D = 0.5 A, V _{GS} = 4.5 V		1.64	2.3	nC



Qgs	Gate-Source Charge	$V_{DS} = 5\text{ V}, I_D = 0.5\text{ A},$ $V_{GS} = 4.5\text{ V}$		0.38		nC
Qgd	Gate-Drain Charge			0.45		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Source Current				0.25	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = 0.25\text{ A}$ (Note 2)		0.8	1.2	V

SOT-363 PACKAGE



Typical Characteristics

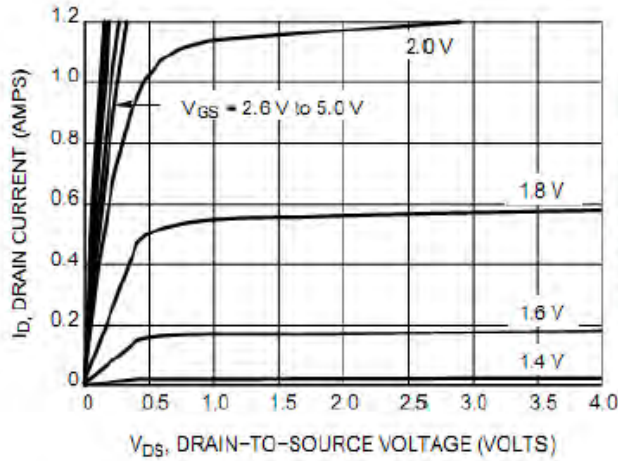


Figure 1. On-Region Characteristics

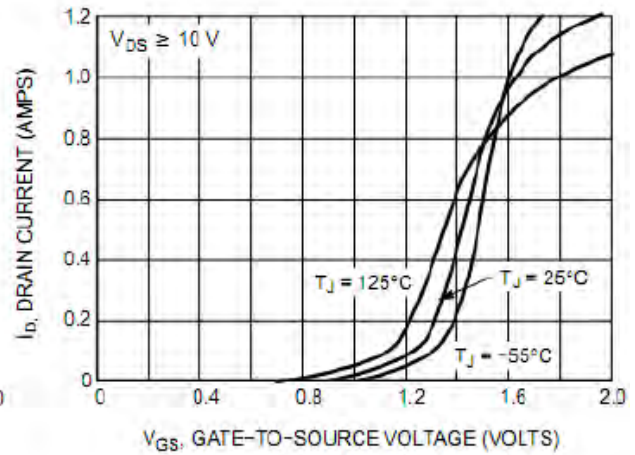


Figure 2. Transfer Characteristics

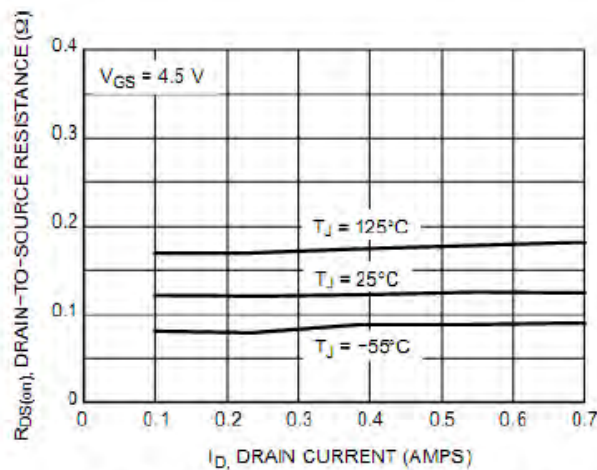


Figure 3. On-Resistance vs. Drain Current and Temperature

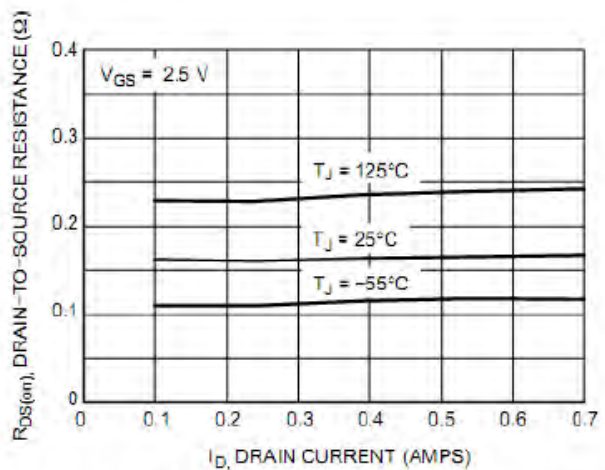


Figure 4. On-Resistance vs. Drain Current and Temperature

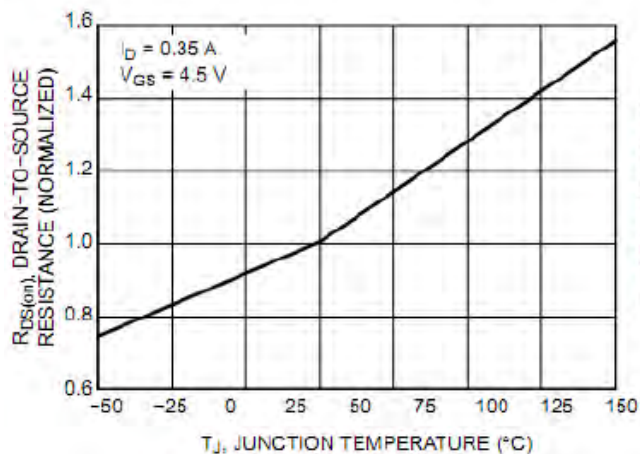


Figure 5. On-Resistance Variation with Temperature

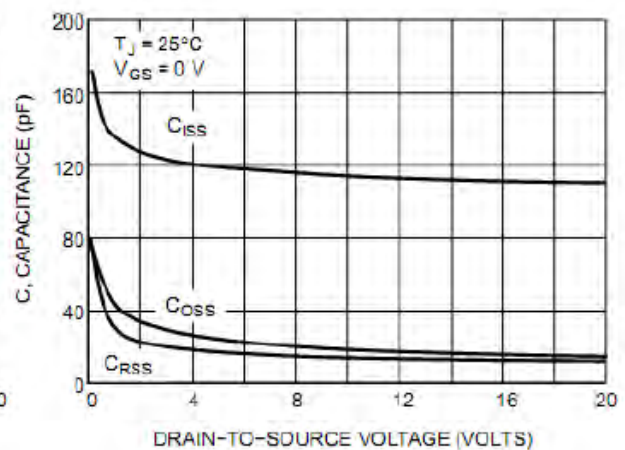


Figure 6. Capacitance Variation

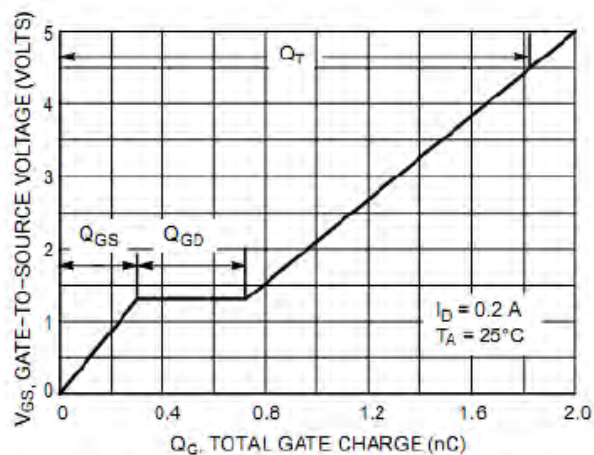


Figure 7. Gate-to-Source Voltage vs. Total Gate Charge

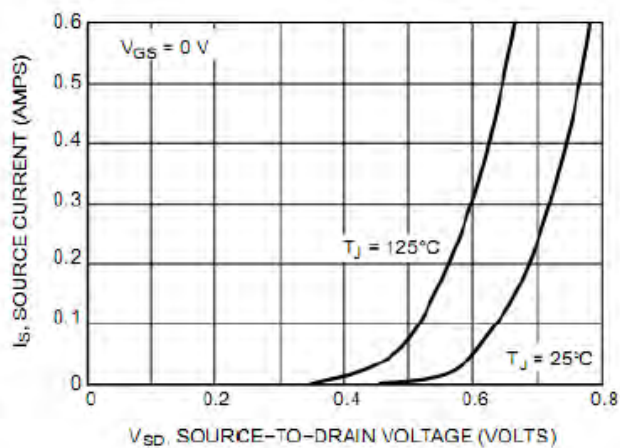


Figure 8. Diode Forward Voltage vs. Current

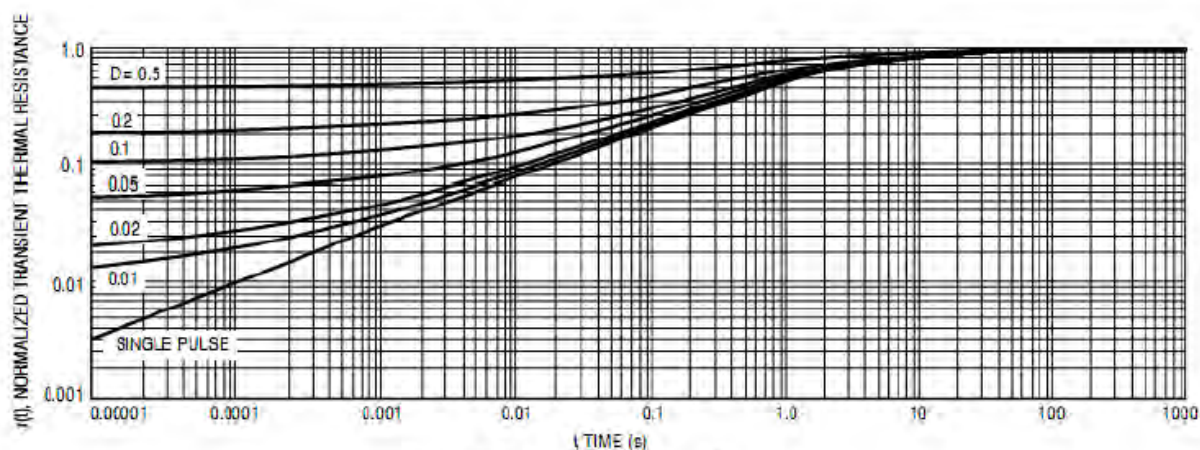


Figure 9. Normalized Thermal Response

Ordering Information:

Device PN	Packing
SE6303N-T ⁽¹⁾ G ⁽²⁾ -WS	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape & Reel

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

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