

Features

- Fully Automotive Qualified to AEC-Q101
- Split Gate Trench MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device ^(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-Channel MOSFET

Maximum Ratings

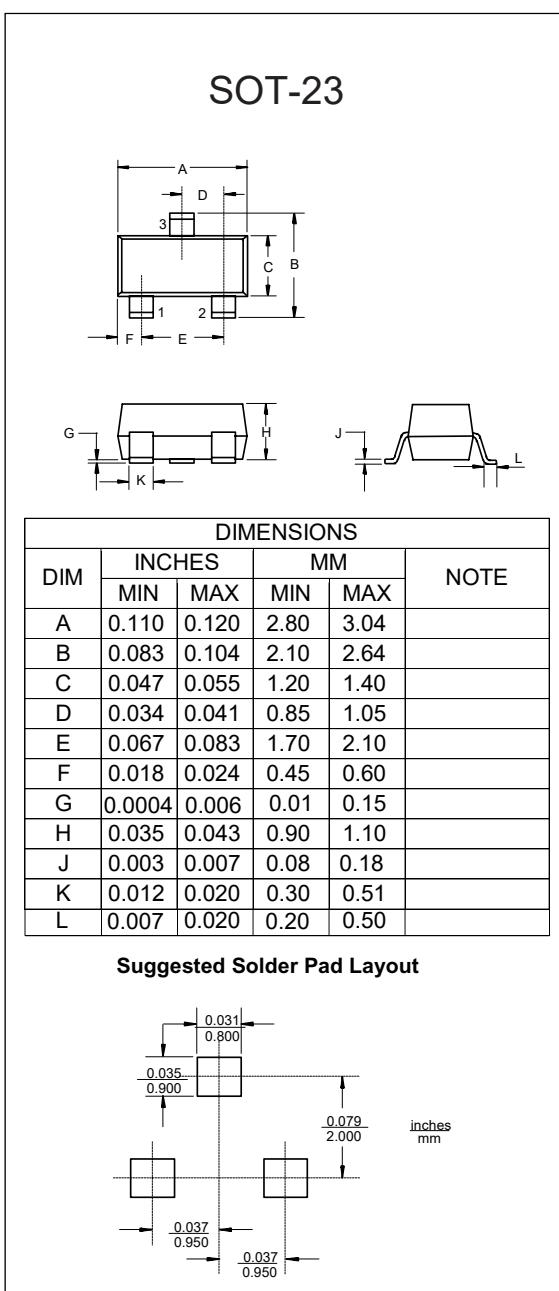
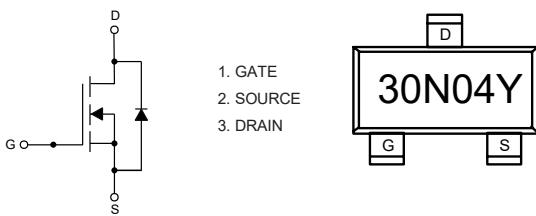
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 115°C/W Junction to Ambient ^(Note2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current $T_A=25^\circ\text{C}$	I_D	5.1	A
$T_A=100^\circ\text{C}$	I_D	3.6	
Pulsed Drain Current ^(Note 3)	I_{DM}	20.4	A
Total Power Dissipation ^(Note 4)	P_D	1.3	W

Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	2.8	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.3A$		22	30	$m\Omega$
Gate Resistance	R_g	$f=1MHz$		3		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				5.1	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=4.3A$			1.2	V
Reverse Recovery Time	t_{rr}	$I_S=4.3A, di/dt=100A/\mu s$		14.9		ns
Reverse Recovery Charge	Q_{rr}			8		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		240		pF
Output Capacitance	C_{oss}			93		
Reverse Transfer Capacitance	C_{rss}			4		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=4.3A$		4		nC
Gate-Source Charge	Q_{gs}			1		
Gate-Drain Charge	Q_{gd}			1		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, R_G=3\Omega, I_D=4.3A$		5.1		ns
Turn-On Rise Time	t_r			2.4		
Turn-Off Delay Time	$t_{d(off)}$			8.6		
Turn-Off Fall Time	t_f			2.4		

Curve Characteristics

Fig.1 - Typical Output Characteristics

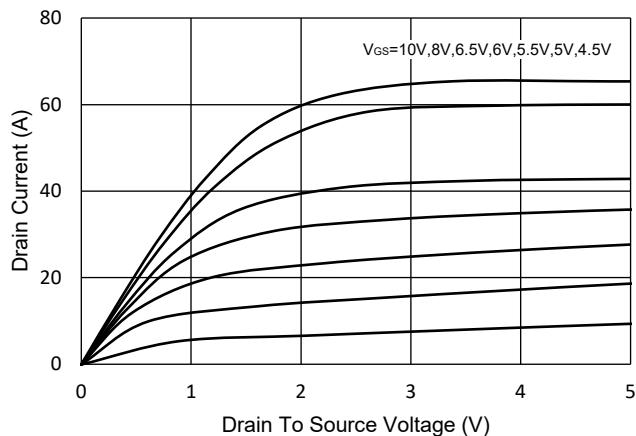


Fig.2 - Transfer Characteristics

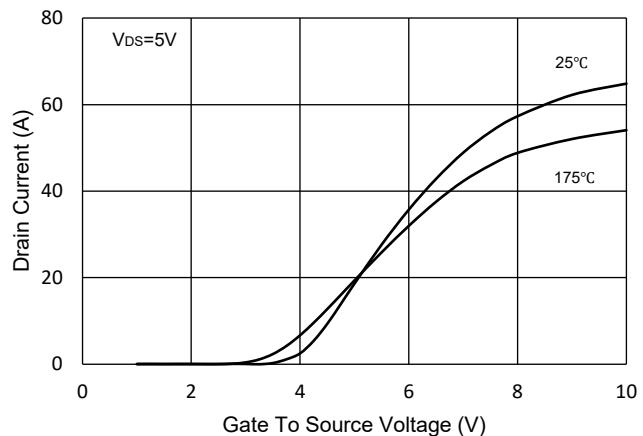


Fig.3 - $R_{DS(ON)}$ - V_{GS}

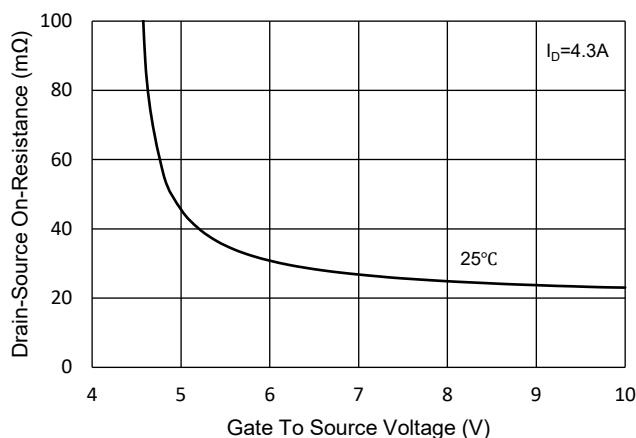


Fig.4 - $R_{DS(ON)}$ - I_D

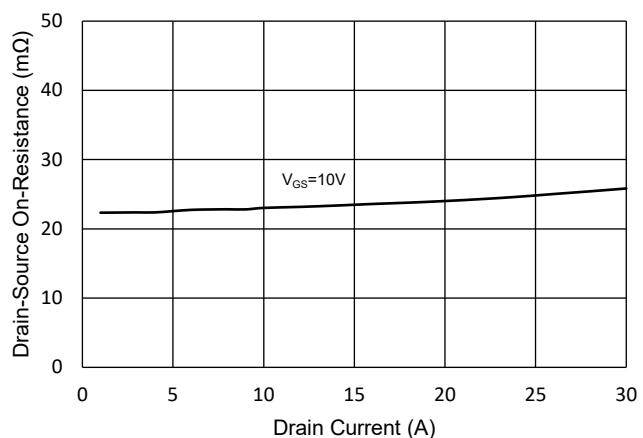


Fig.5 - Capacitance Characteristics

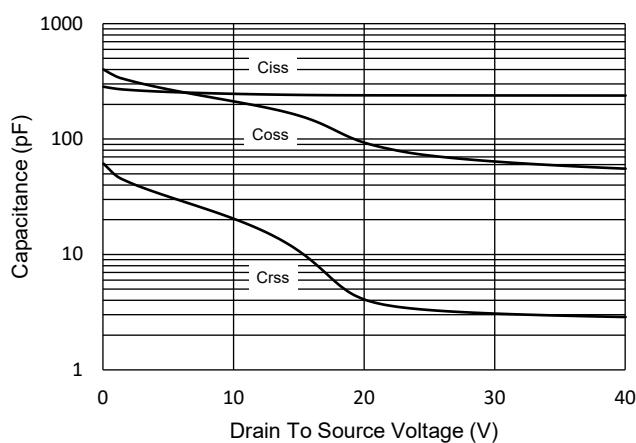
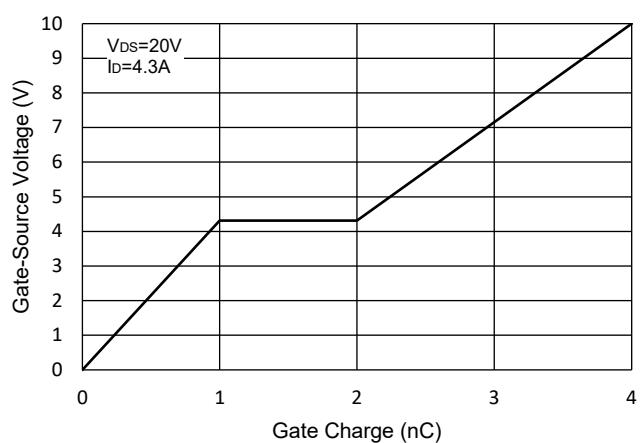


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

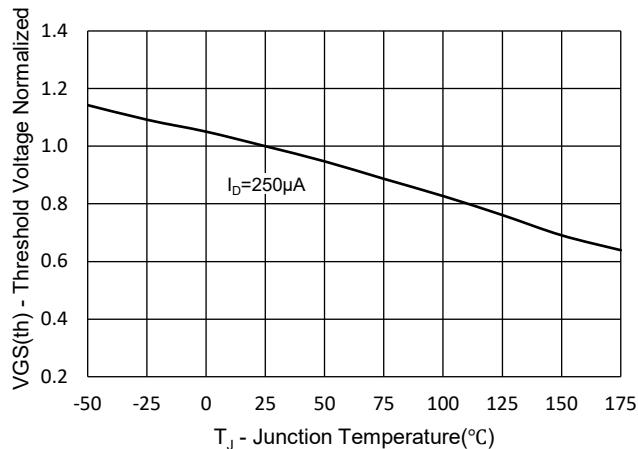


Fig.8 - Normalized On Resistance Characteristics

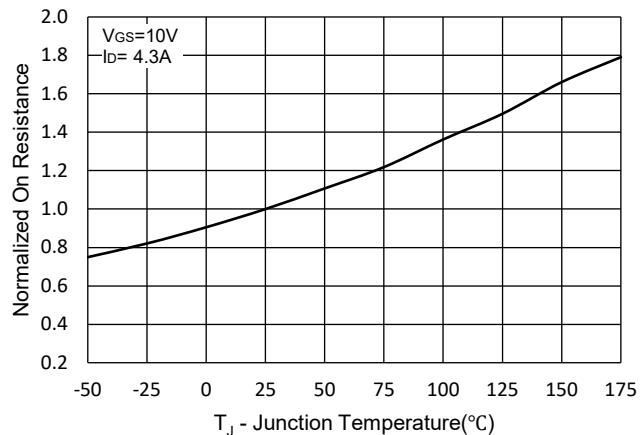


Fig.9 - I_S - V_{SD}

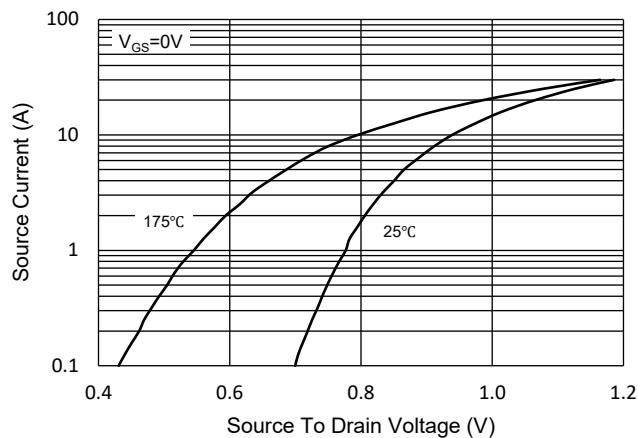


Fig.10 - Drain Current

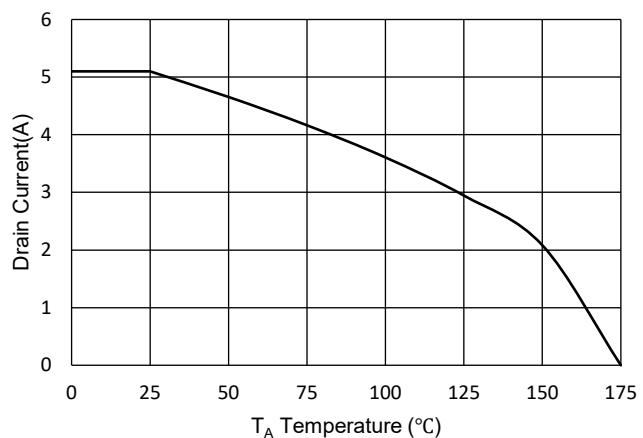
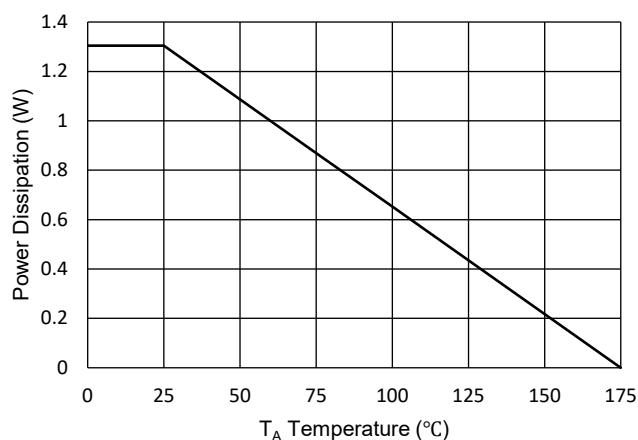


Fig.11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

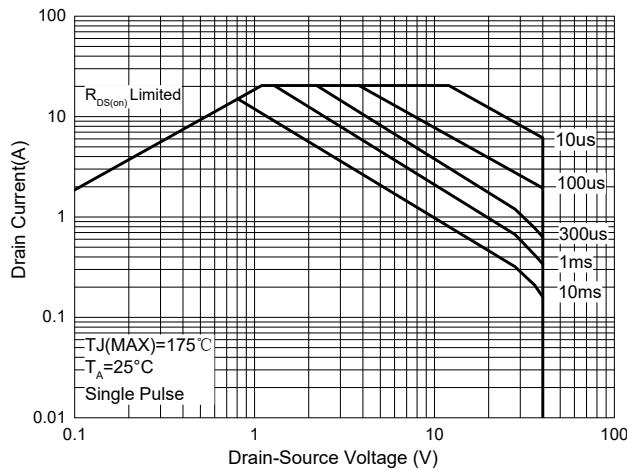
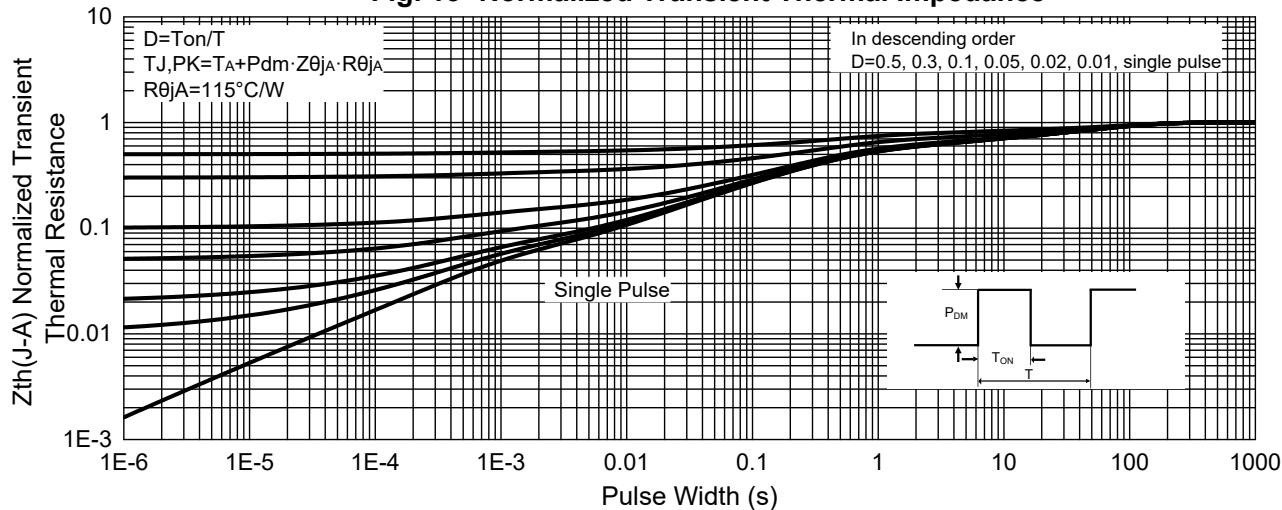


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

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