

**Features**

- Low  $R_{DS(on)}$  & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Seitching and Soft Recovery
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

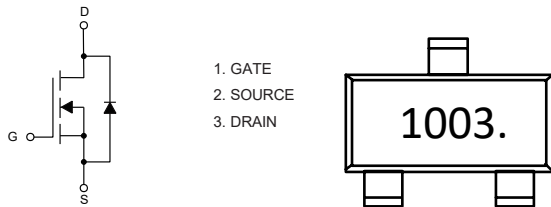
**Maximum Ratings**

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 104°C/W Junction to Ambient ( $t \leq 10S$ ) (Note 2)
- Thermal Resistance: 140°C/W Junction to Ambient(Steady-State )

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltgag	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	3 A
		$T_A=70^\circ C$	2.4 A
Pulsed Drain Current (Note 3)	$I_{DM}$	12	A
Total Power Dissipation	$P_D$	1.2	W

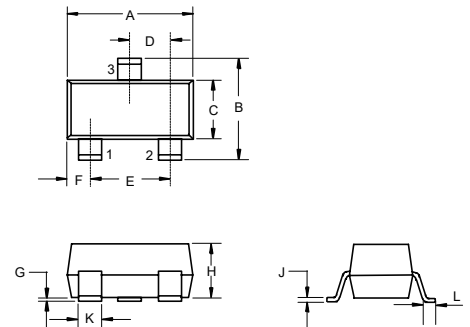
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.  
 2. Device Mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.  
 3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

**Internal Structure and Marking Code**



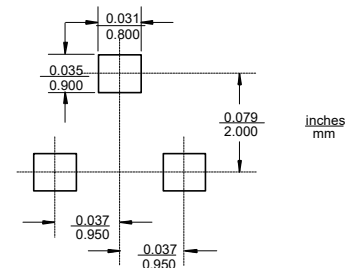
**N-CHANNEL MOSFET**

**SOT-23**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

**Suggested Solder Pad Layout**



**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.8	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$		110	140	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$		160	300	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				3	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=3A$		0.8	1.2	V
Reverse Recovery Time	$t_{rr}$	$I_S=3A, di/dt=100A/\mu s$		32		ns
Reverse Recovery Charge	$Q_{rr}$			39		nC
Peak Reverse Recovery Current	$I_{rm}$			2.1		A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		206		pF
Output Capacitance	$C_{oss}$			29		
Reverse Transfer Capacitance	$C_{rss}$			1.4		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=3A$		4.3		nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			1.1		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=3.0A, R_{GEN}=2\Omega$		14.7		ns
Turn-On Rise Time	$t_r$			3.5		
Turn-Off Delay Time	$t_{d(off)}$			20.9		
Turn-Off Fall Time	$t_f$			2.7		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

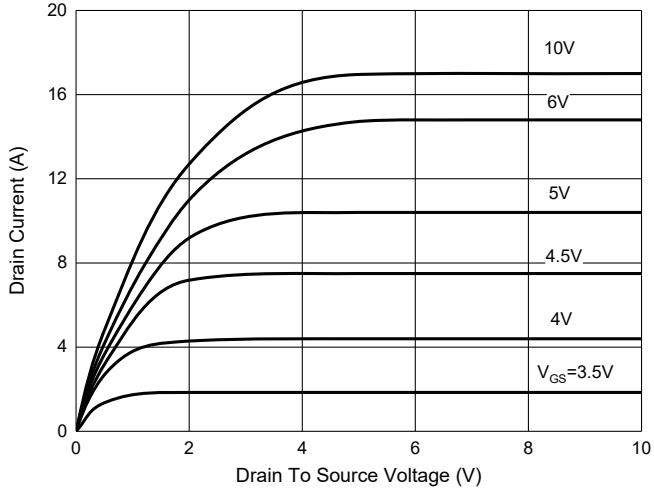


Fig. 2 - Transfer Characteristics

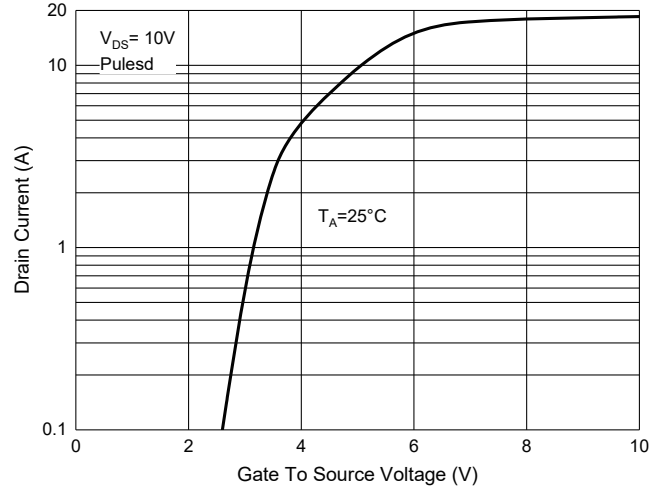


Fig. 3 - Capacitance Characteristics

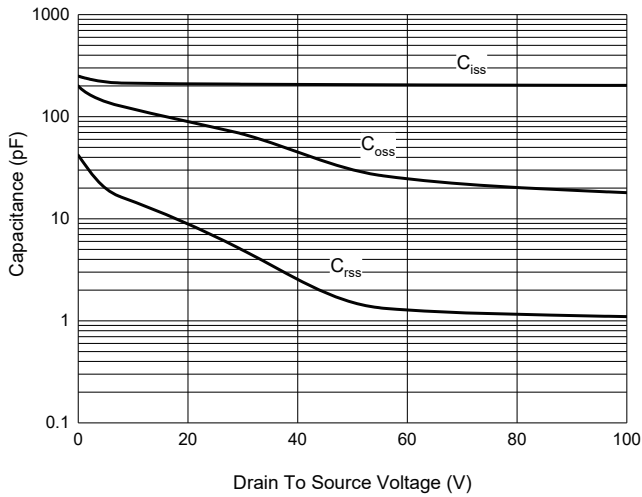


Fig. 4 - Gate Charge

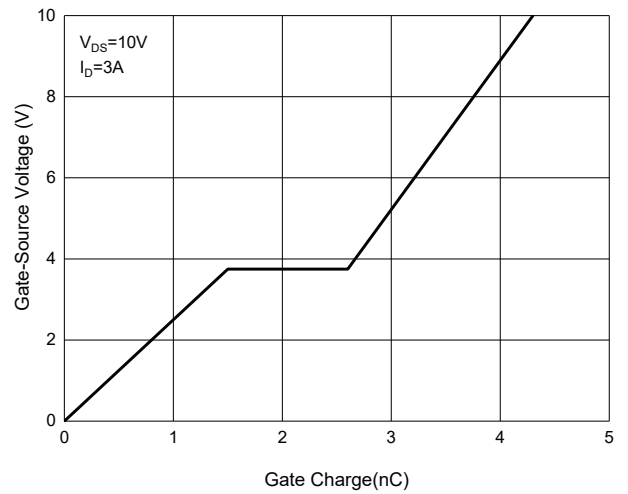


Fig. 5 - Drain-Source Breakdown Voltage

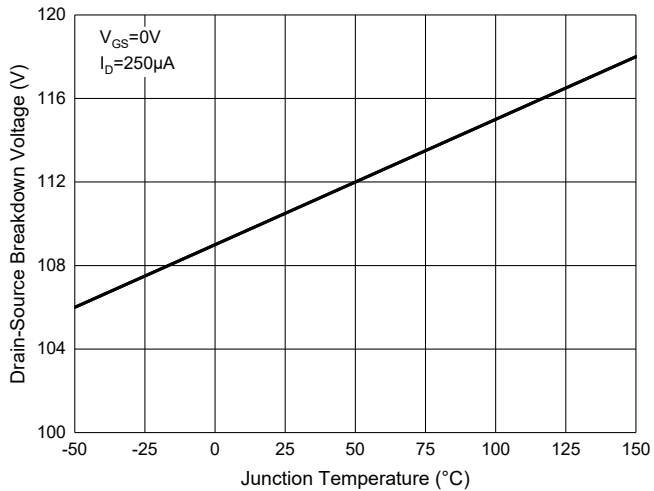
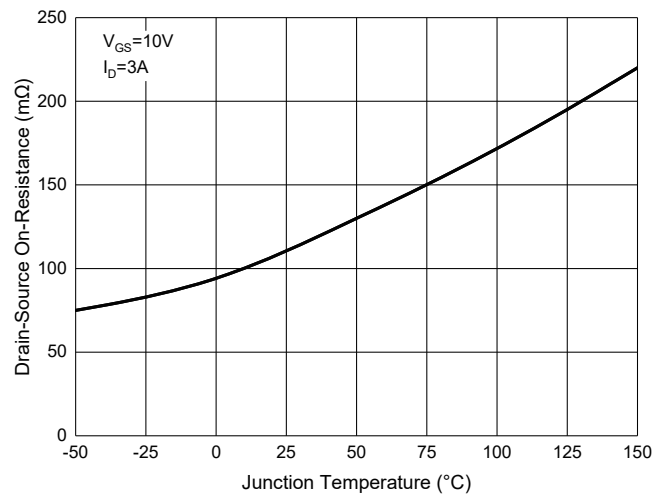


Fig. 6 - Drain-Source on-Resistance



Curve Characteristics

Fig. 7 -  $I_S - V_{SD}$

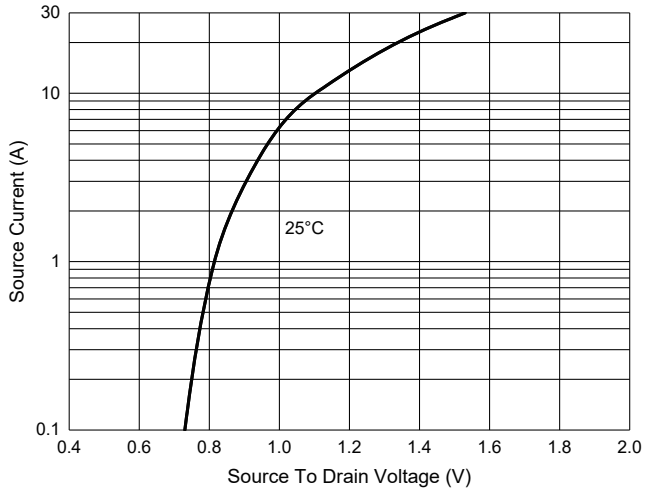


Fig. 8 - Safe Operation Area

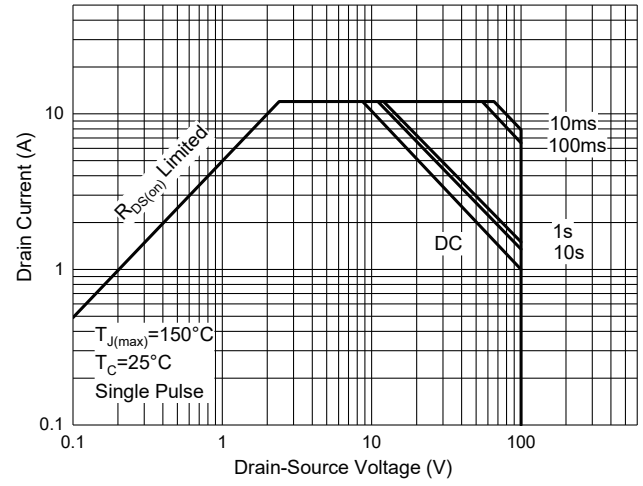
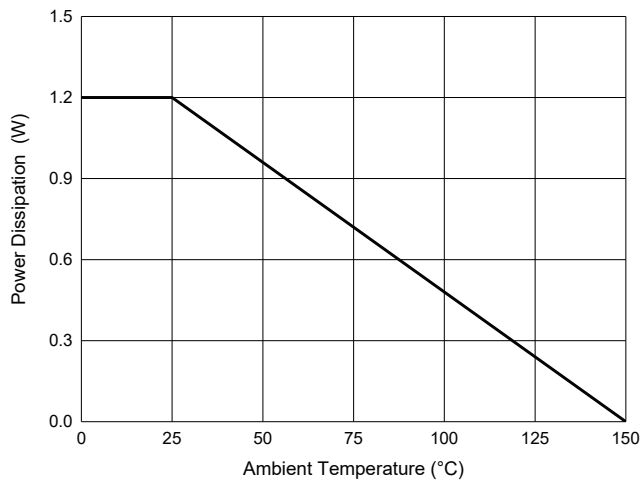
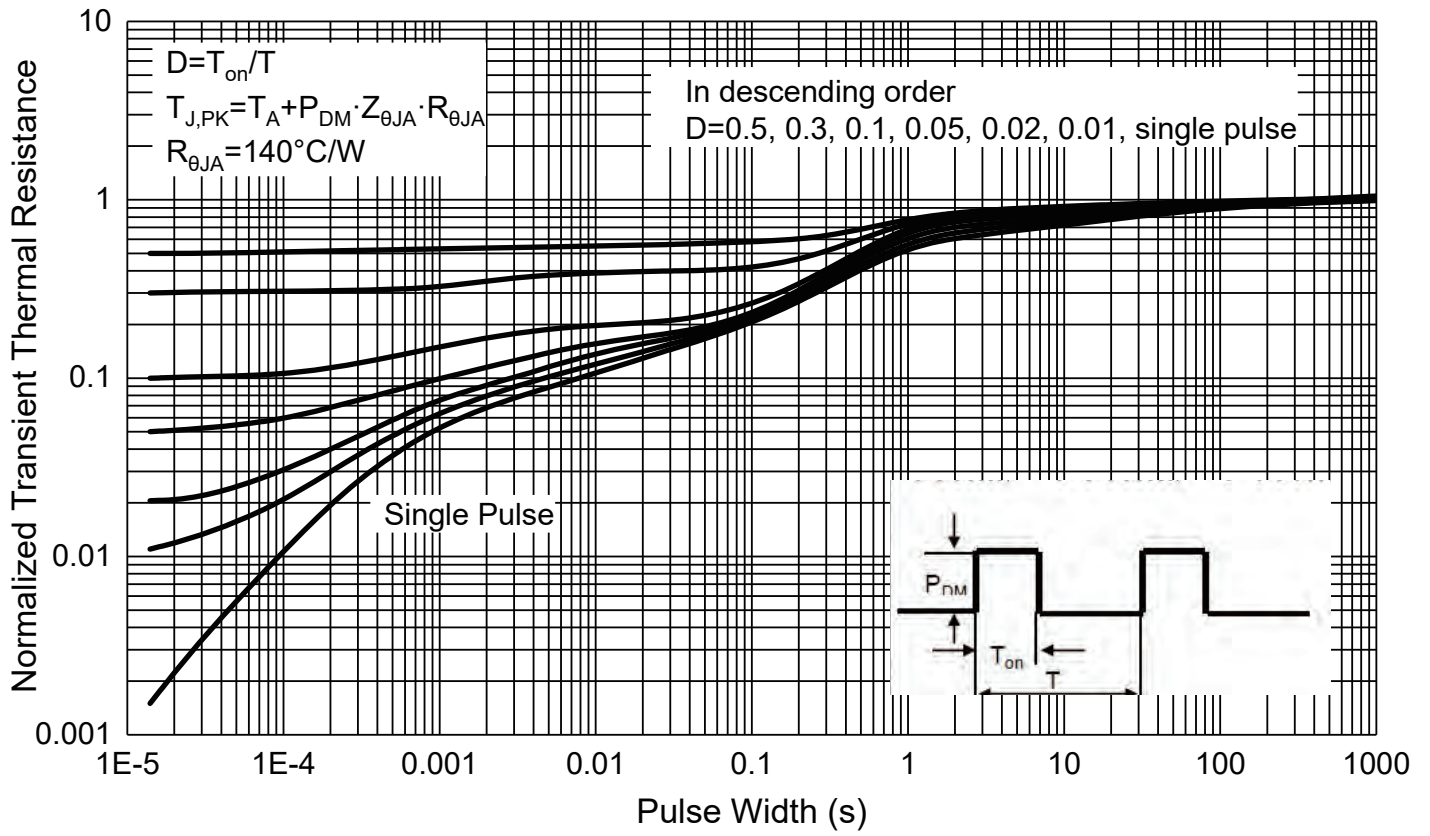


Fig. 9- Power Derating Curve



Curve Characteristics

Fig. 10 - Normalized Maximum Transient Thermal Impedance



## Ordering Information

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

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