

**Features**

- High Density Cell Desihn for Ultra Low  $R_{DS(on)}$
- Fully Characterized Avalanche Voltage and Current
- 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**

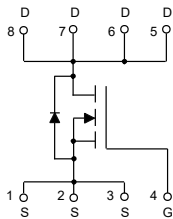
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 5°C/W Junction to Case<sup>(Note 2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltlage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	30
		$T_C=100^\circ\text{C}$	21
Pulsed Drain Current <sup>(Note 3)</sup>	$I_{DM}$	60	A
Single Pulse Avalanche Energy <sup>(Note 4)</sup>	$E_{AS}$	70	mJ
Total Power Dissipation	$P_D$	25	W

**Note:**

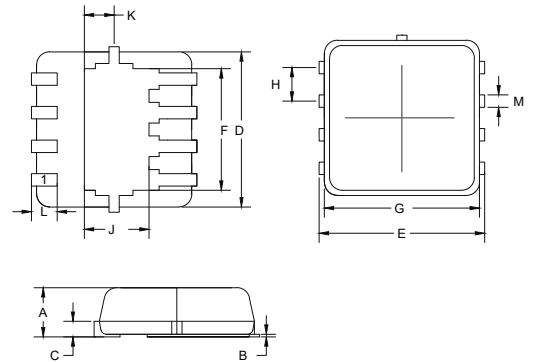
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on FR4 Board,  $t_s \leq 10$  sec.
3. Pulse Width Limited by Maximum Junction Temperature.
4. EAS Condition:  $T_J=25^\circ\text{C}$ ,  $V_{DD}=15\text{V}$ ,  $V_G=10\text{V}$ ,  $L=0.1\text{mH}$ ,  $R_g=25\Omega$ .

**Internal Structure**



**N-CHANNEL MOSFET**

**DFN3030**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.028	0.035	0.70	0.90	
B	0.000	0.002	0.00	0.05	
C	0.004	0.010	0.10	0.25	
D	0.118		3.00		TYP.
E	0.126		3.20		TYP.
F	0.093		2.35		TYP.
G	0.118		3.00		TYP.
H	0.026		0.65		TYP.
J	0.069		1.75		TYP.
K	0.023		0.575		TYP.
L	0.012	0.020	0.30	0.50	
M	0.009	0.014	0.24	0.35	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	33		V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage <sup>(Note 5)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.3	V
Drain-Source On-Resistance <sup>(Note 5)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		6.3	9	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$		9.2	13	
Forward Transconductance <sup>(Note 5)</sup>	$g_{FS}$	$V_{DS}=5V, I_D=20A$	15			S
<b>Dynamic Characteristics<sup>(Note 6)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		1490		pF
Output Capacitance	$C_{oss}$			220		
Reverse Transfer Capacitance	$C_{rss}$			135		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=9A$		15		nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			4.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=10A$ $V_{GS}=10V, R_{GEN}=1.8\Omega$		10		ns
Turn-On Rise Time	$t_r$			8		
Turn-Off Delay Time	$t_{d(off)}$			30		
Turn-Off Fall Time	$t_f$			5		
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				25	A
Body Diode Voltage	$V_{SD}$	$I_{SD}=10A, V_{GS}=0V$		0.85	1.2	V
Reverse Recovery Time	$t_{rr}$	$T_J=25^\circ C, I_F=10A, di/dt=100A/\mu s$		22	35	ns
Reverse Recovery Charge	$Q_{rr}$			12	20	nC
Forward Turn-On Time	$t_{on}$	Intrinsic Turn-On Time is Negligible (Turn-On is Dominated by LS+LD)				

Note:

5. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

6. Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics**

Fig. 1 - Output Characteristics

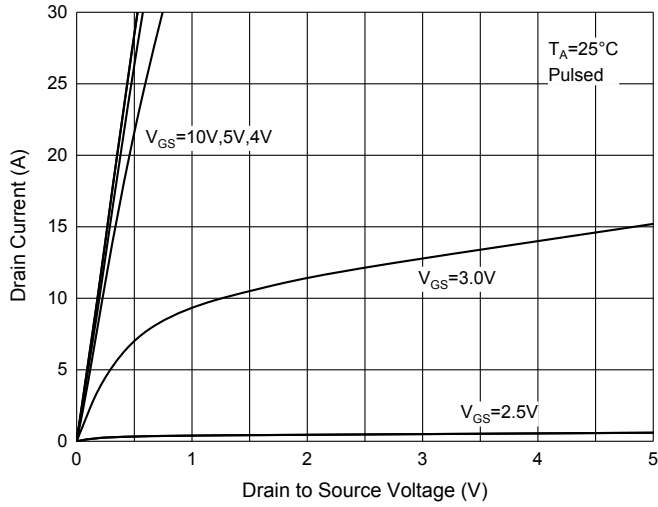


Fig. 2 - Transfer Characteristics

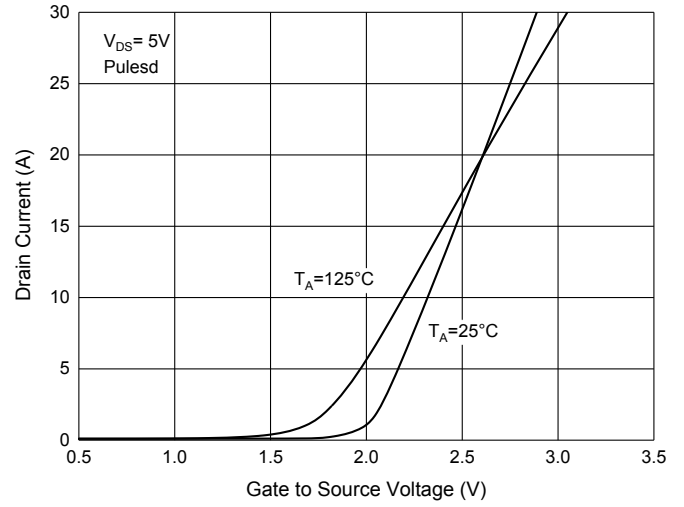


Fig. 3 -  $R_{DS(ON)} - I_D$

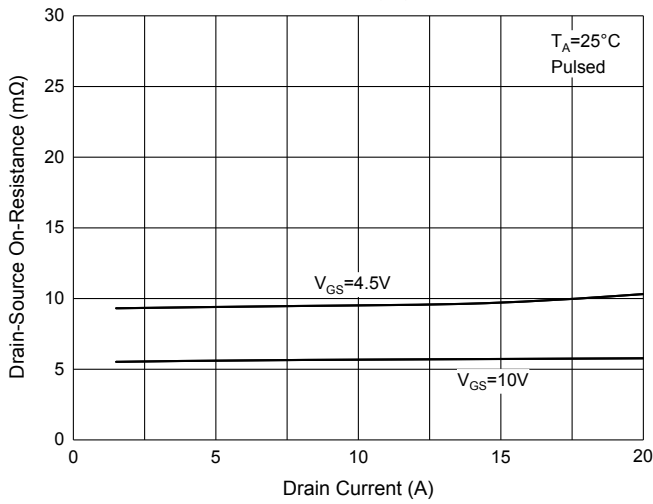


Fig. 4 -  $I_S - V_{SD}$

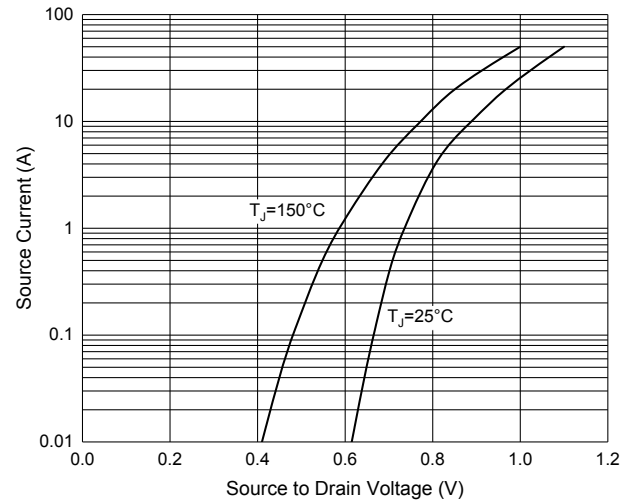


Fig. 5 -  $R_{DS(ON)} - \text{Temperature}$

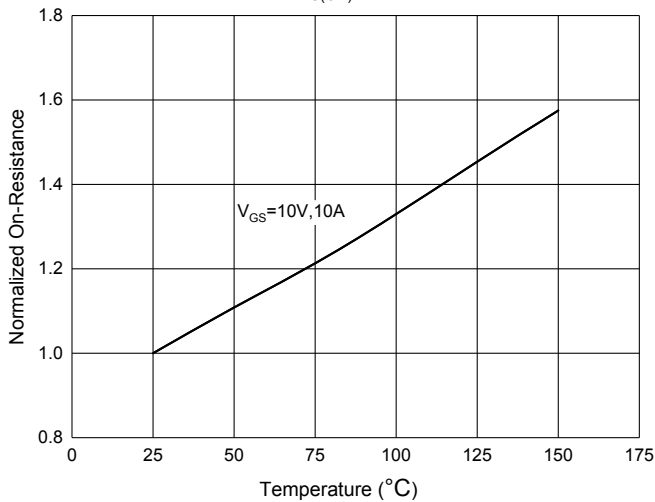
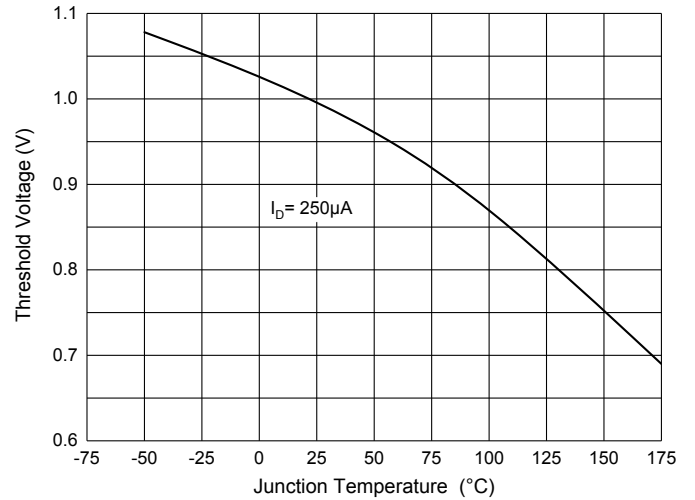


Fig. 6 - Threshold Voltage



## Ordering Information

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

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