

## Features

- Advanced Trench Cell Design
- Low Thermal Resistance
- 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

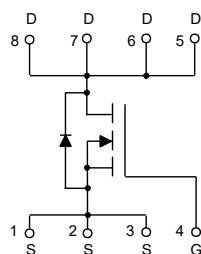
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.47°C/W Junction to Case (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current $T_C=25^\circ\text{C}$	$I_D$	80	A
Pulsed Drain Current (Note 3)	$I_{DM}$	320	A
Total Power Dissipation $T_C=25^\circ\text{C}$	$P_D$	85	W

Note:

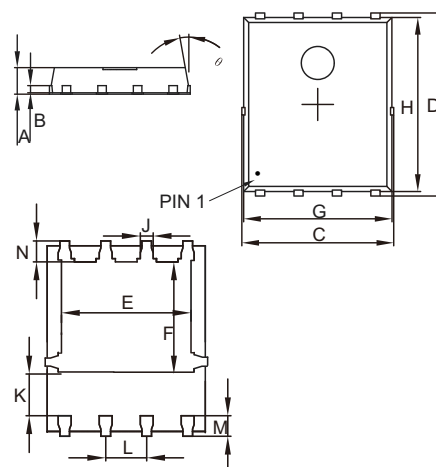
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. The Maximum Current Rating is Package Limited.

## Internal Structure



## N-CHANNEL MOSFET

### DFN5060



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.031	0.047	0.80	1.20	
B	0.010		0.254		TYP.
C	0.193	0.222	4.90	5.64	
D	0.232	0.250	5.90	6.35	
E	0.148	0.167	3.75	4.25	
F	0.126	0.154	3.20	3.92	
G	0.189	0.213	4.80	5.40	
H	0.222	0.239	5.65	6.06	
K	0.045	0.059	1.15	1.50	
J	0.012	0.020	0.30	0.50	
L	0.046	0.054	1.17	1.37	
M	0.012	0.028	0.30	0.71	
N	0.016	0.028	0.40	0.71	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60			V
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =48V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C			1	μA
		V <sub>DS</sub> =48V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			30	
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.5		2.5	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		2.2	2.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		3.3	4.5	
Diode Characteristics						
Diode Forward Voltage <sup>(Note 4)</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.3	V
Continuous Body Diode Current	I <sub>S</sub>				80	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>SD</sub> =20A, dI <sub>SD</sub> /dt=100A/μs		67		ns
Reverse Recovery Charge	Q <sub>rr</sub>			90		nC
Dynamic Characteristics <sup>(Note 5)</sup>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz		4894		pF
Output Capacitance	C <sub>oss</sub>			2208		
Reverse Transfer Capacitance	C <sub>rss</sub>			171		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =20A		99		nC
Gate-Source Charge	Q <sub>gs</sub>			16		
Gate-Drain Charge	Q <sub>gd</sub>			27		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =30V, V <sub>GEN</sub> =10V, R <sub>G</sub> =4.5Ω, R <sub>L</sub> =1.5Ω, I <sub>DS</sub> =20A		14		ns
Turn-On Rise Time	t <sub>r</sub>			36		
Turn-Off Delay Time	t <sub>d(off)</sub>			75		
Turn-Off Fall Time	t <sub>f</sub>			50		

Note:

4. Pulse Test; Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 2\%$ .

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

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

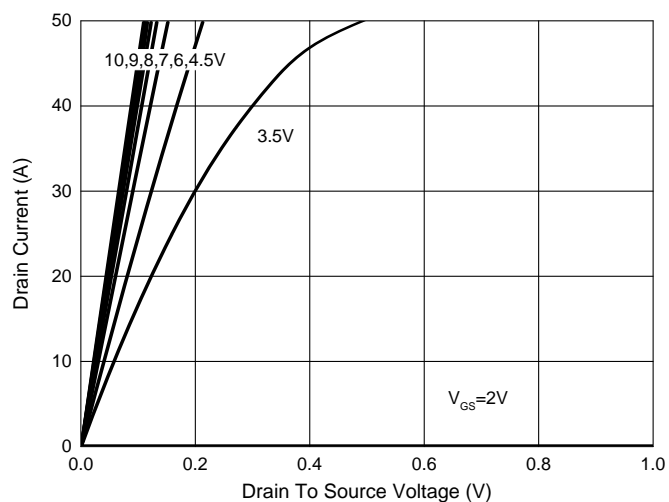


Fig. 2 -  $I_S - V_{SD}$

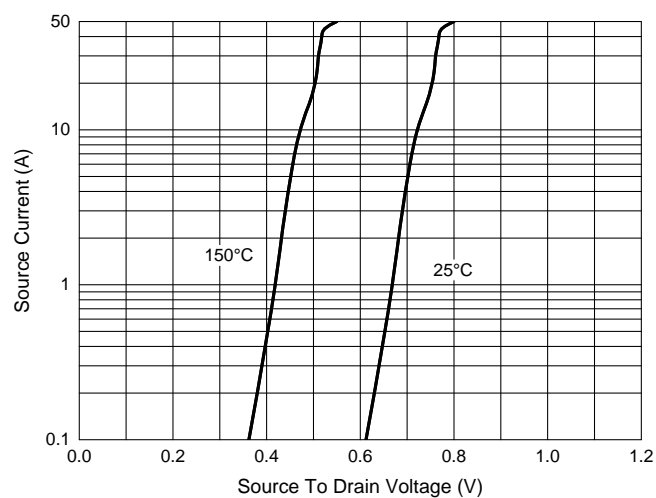


Fig. 3 -  $R_{DS(ON)} - I_D$

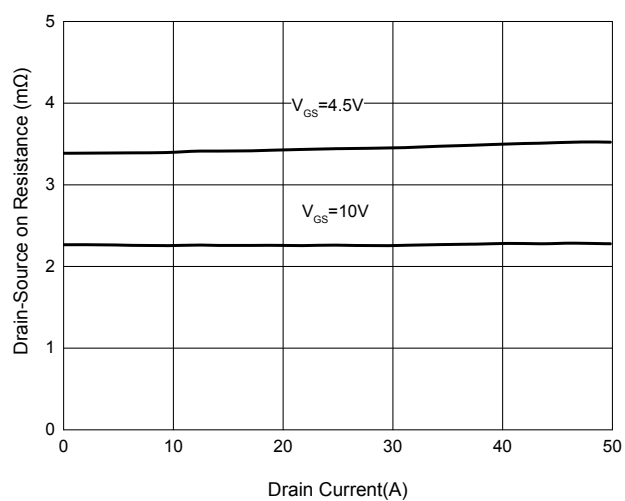


Fig. 4 - Normalized On Resistance Characteristics

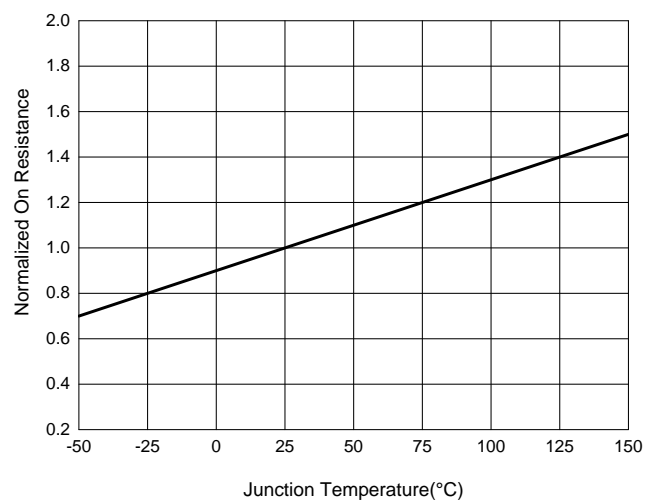


Fig. 5 - Capacitance Characteristics

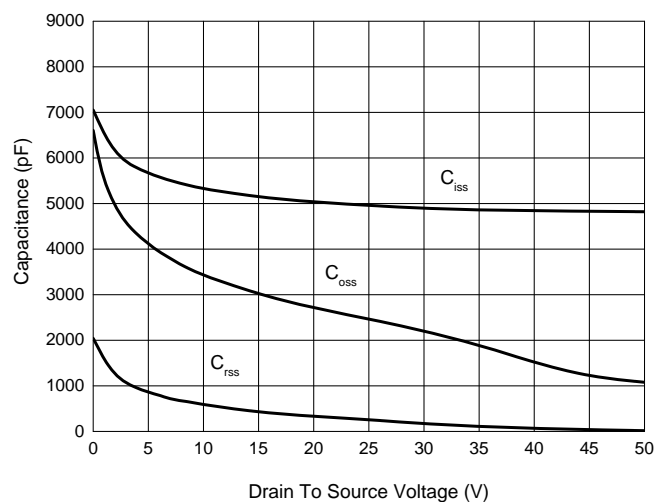
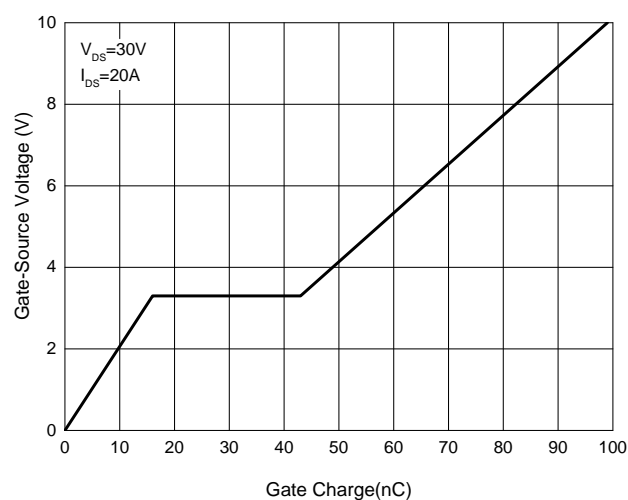
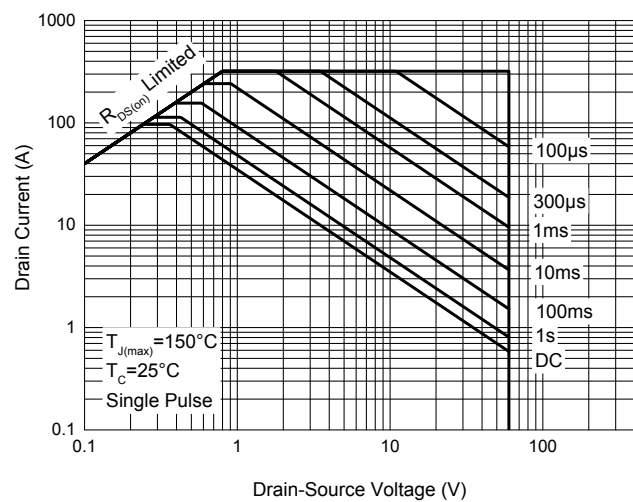


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel

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