

**Features**

- Low Gate Charge
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

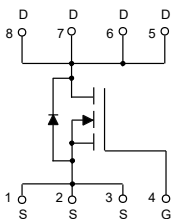
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.6°C/W Junction to Case (Note 1)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	50	A
Pulsed Drain Current (Note 2)	$I_{DM}$	160	A
Total Power Dissipation	$P_D$	78	W

Note:

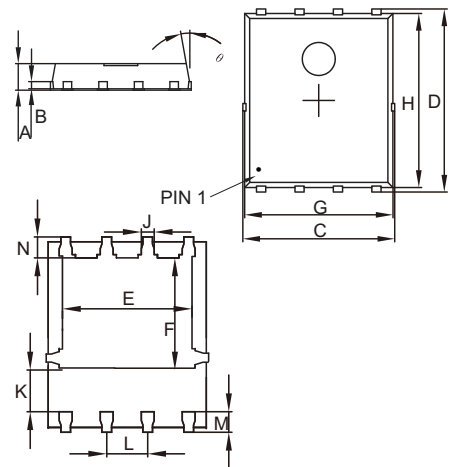
- 1.Surface Mounted on FR4 Board,  $t \leq 10$  sec.
- 2.The Maximum Current Rating is Package Limited.

**Internal Structure**



**N-CHANNEL  
MOSFET**

**DFN5060**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V, T_J=25^\circ C$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		6.3	8.2	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$		10.8	14	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.3	V
Continuous Body Diode Current	$I_S$				50	A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		1409		pF
Output Capacitance	$C_{oss}$			691		
Reverse Transfer Capacitance	$C_{rss}$			49		
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=20A$		29		nC
Gate-Source Charge	$Q_{gs}$			6.2		
Gate-Drain Charge	$Q_{gd}$			7.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=30V, V_{GEN}=10V,$ $R_G=4.5\Omega, R_L=1.5\Omega,$ $I_{DS}=20A$		9.8		ns
Turn-On Rise Time	$t_r$			34		
Turn-Off Delay Time	$t_{d(off)}$			23.6		
Turn-Off Fall Time	$t_f$			24.8		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

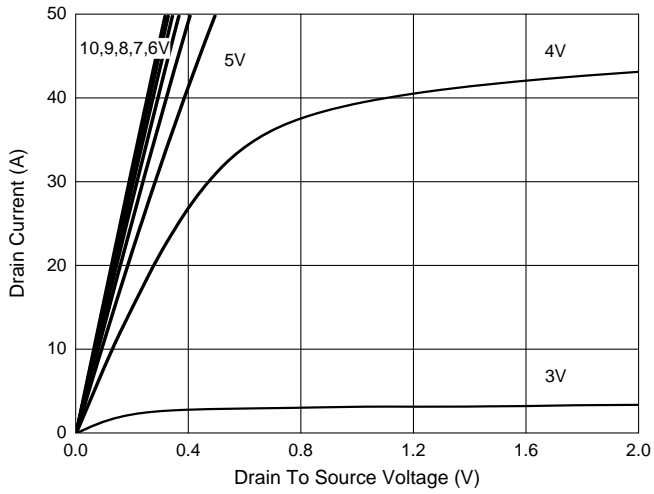


Fig. 2 -  $R_{DS(ON)} - I_D$

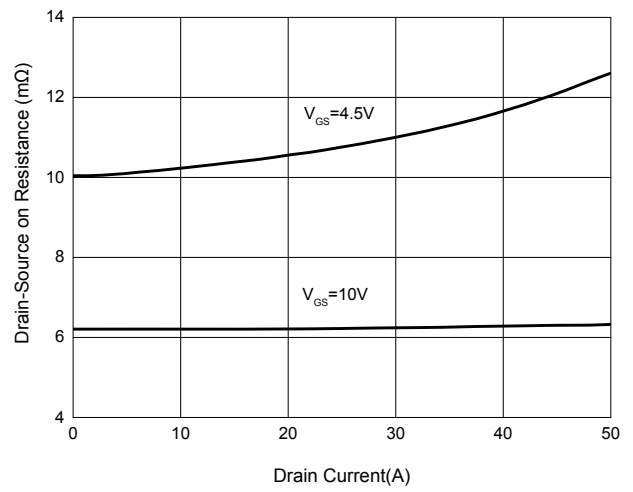


Fig. 3 - Normalized On Resistance Characteristics

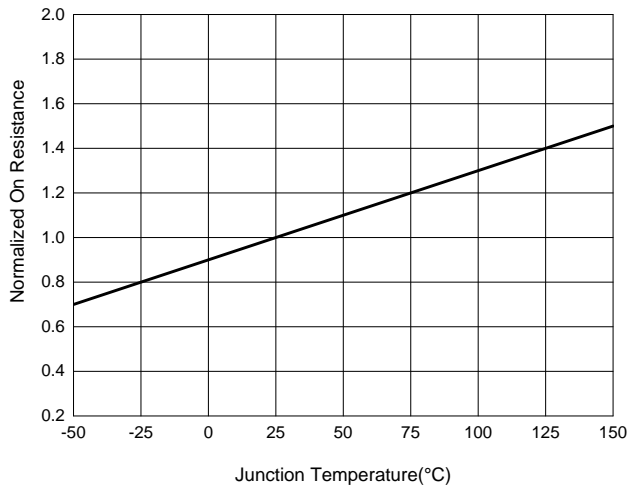


Fig. 4 -  $I_S - V_{SD}$

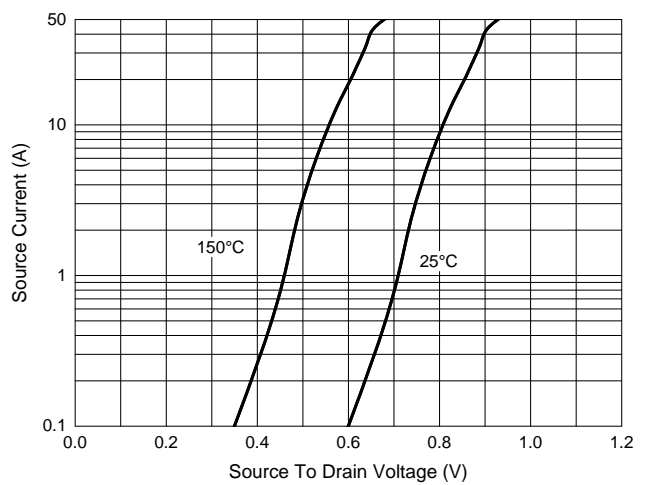


Fig. 5 - Capacitance Characteristics

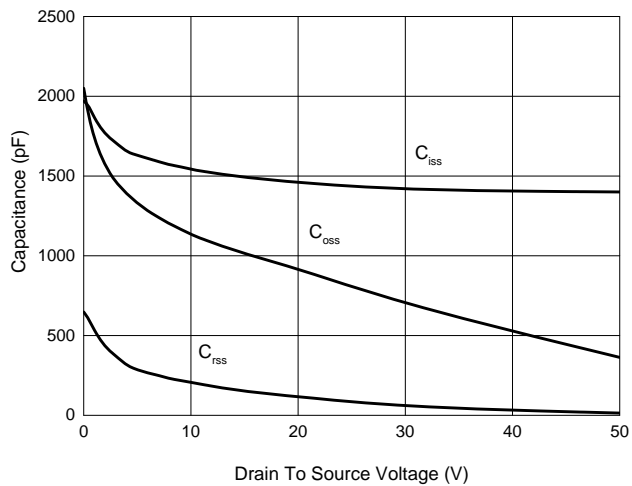
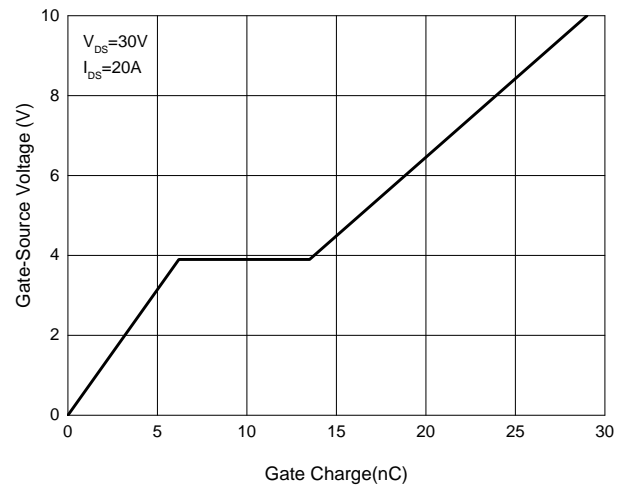
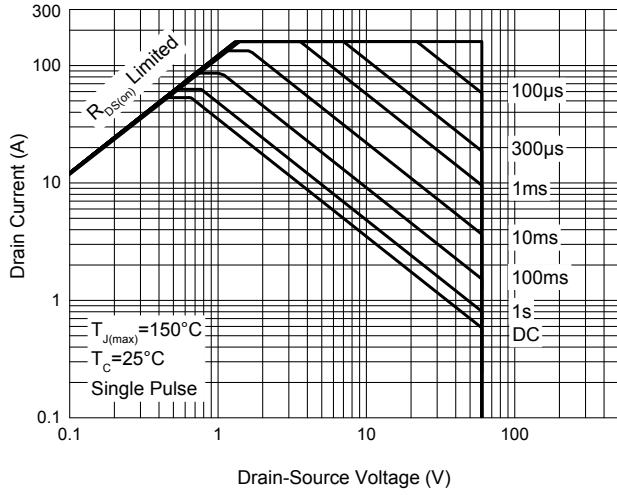


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 - Safe Operation Area



## Ordering Information

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

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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