

## Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Excellent Package For Heat Dissipation
- Moisture Sensitivity Level 1
- Halogen Free, "Green" Device <sup>(Note 1)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 55°C/W Junction to Ambient <sup>(Note 2)</sup>
- Thermal Resistance: 2.1°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	75	A
		53	
Pulsed Drain Current <sup>(Note 3)</sup>	I <sub>DM</sub>	300	A
Total Power Dissipation <sup>(Note 4)</sup>	P <sub>D</sub>	74	W
Single Pulsed Avalanche Energy <sup>(Note 5)</sup>	E <sub>AS</sub>	84	mJ

Note:

F<sub>E</sub>Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

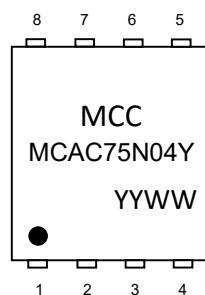
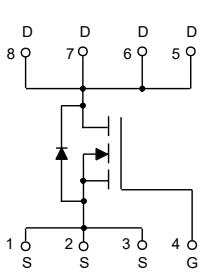
G<sub>E</sub>The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The Power dissipation P<sub>DSM</sub> is based on R<sub>θJA</sub> t≤ 10s and the maximum allowed junction temperature of 175°C. The value in any given application depends on the user's specific board design.

H<sub>E</sub>Repetitive rating; pulse width limited by max. junction temperature.

I<sub>E</sub>P<sub>D</sub> is based on max. junction temperature, using junction-case thermal resistance.

J<sub>E</sub>R<sub>θJC</sub> = 55°C/W X R<sub>θJA</sub> = 55°C/W X 2.1°C/W = 117.5°C/W

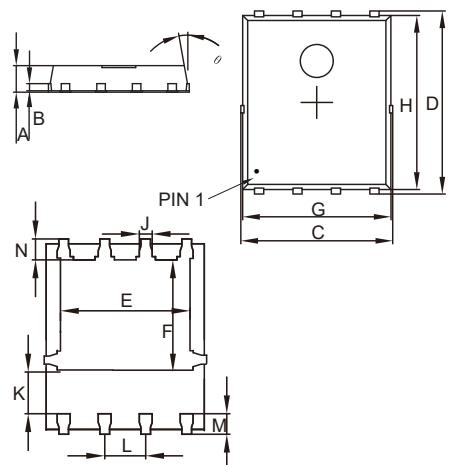
## Internal Structure and Marking Code



4 codes in total  
YY is the year  
WW is the , ^\^

## N-CHANNEL MOSFET

DFN5060



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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		5.2	6.8	$m\Omega$
Gate Resistance	$R_g$	f=1 MHz, Open drain		1.5		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				75	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=55A, dI_F/dt=100A/\mu s$		18		ns
Reverse Recovery Charge	$Q_{rr}$			10		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		1000		pF
Output Capacitance	$C_{oss}$			335		
Reverse Transfer Capacitance	$C_{rss}$			18		
Total Gate Charge	$Q_g$	$V_{DS}=20V, V_{GS}=10V, I_D=25A$		13		nC
Gate-Source Charge	$Q_{gs}$			4.6		
Gate-Drain Charge	$Q_{gd}$			2.9		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=20V, V_{GS}=10V, R_{GEN}=2.2\Omega, I_{DS}=25A$		9		ns
Turn-On Rise Time	$t_r$			127		
Turn-Off Delay Time	$t_{d(off)}$			14		
Turn-Off Fall Time	$t_f$			5.2		

## Curve Characteristics

Fig. 1 Typical Output Characteristics

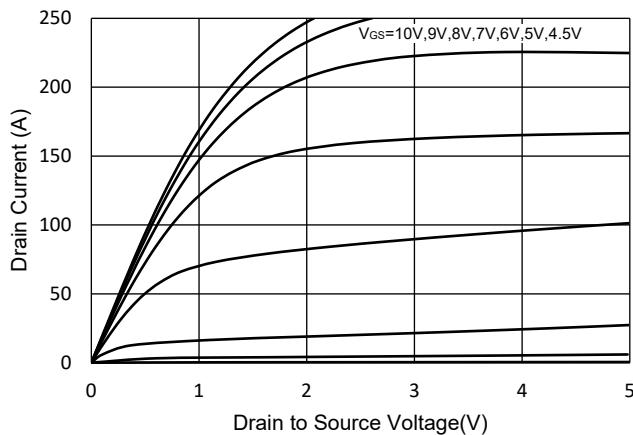


Fig.2 Transfer Characteristic

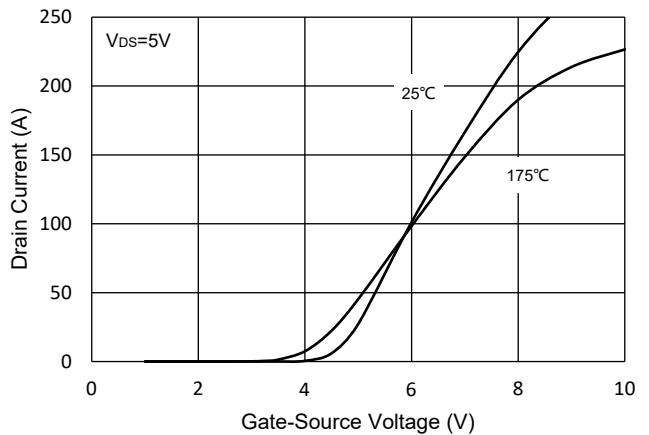


Fig.3  $R_{DSON}$ - $V_{GS}$

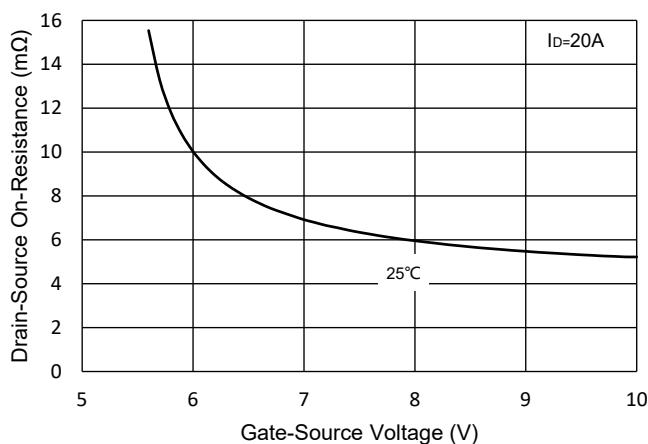


Fig. 4 -  $R_{DS(ON)}$ - $I_D$

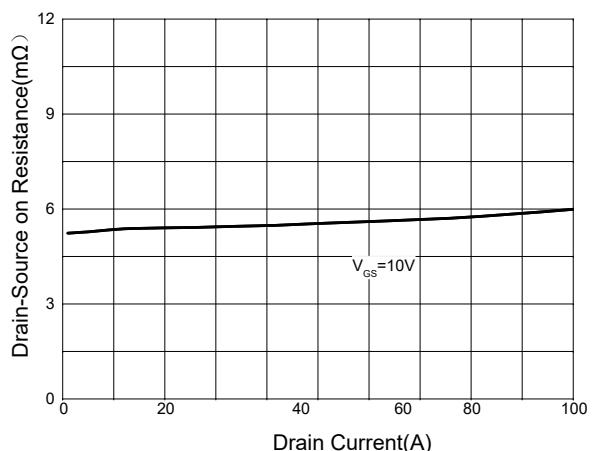


Fig.5 Capacitance Characteristics

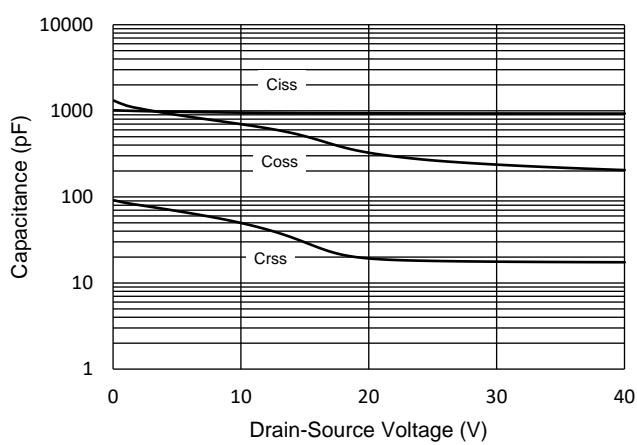
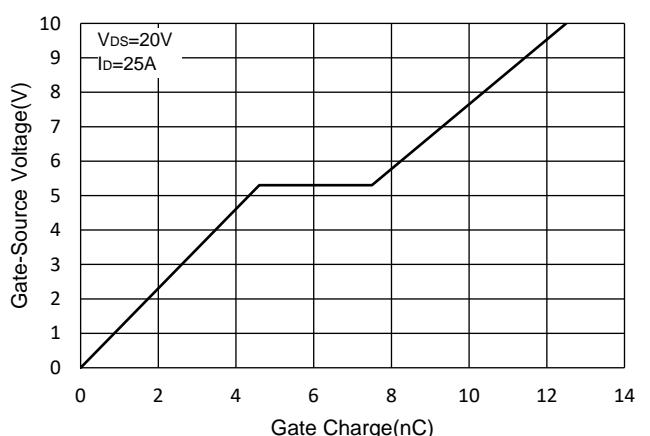


Fig.6 Gate Charge



## Curve Characteristics

Fig.7 Normalized Threshold Voltage

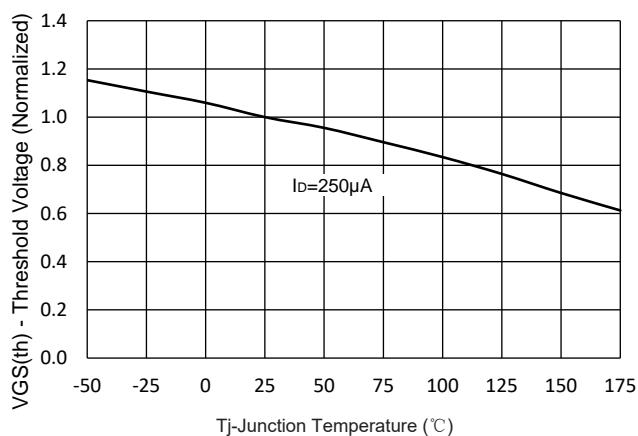


Fig.8 Normalized On Resistance Characteristics

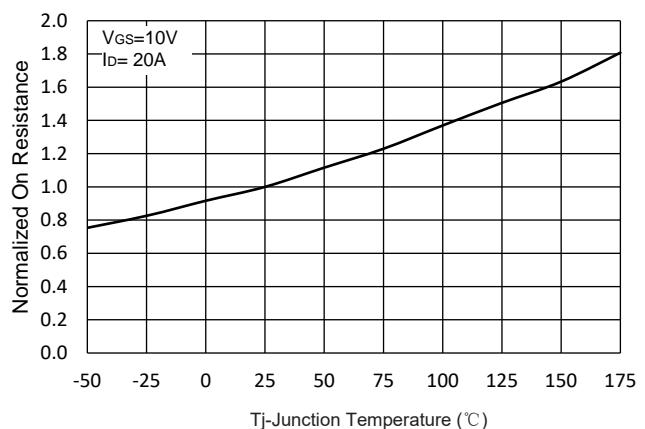


Fig.9 IS-VSD

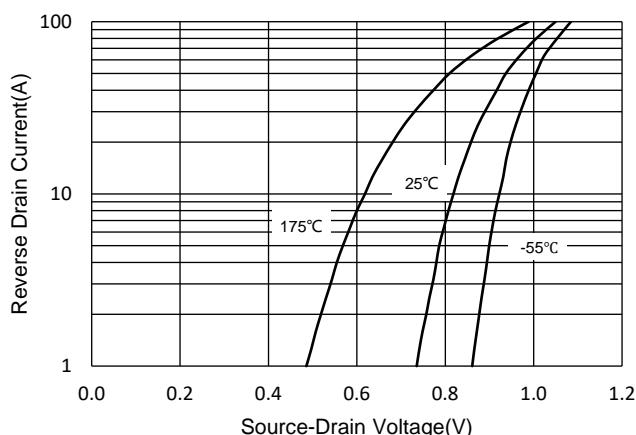


Fig.10 Drain Current

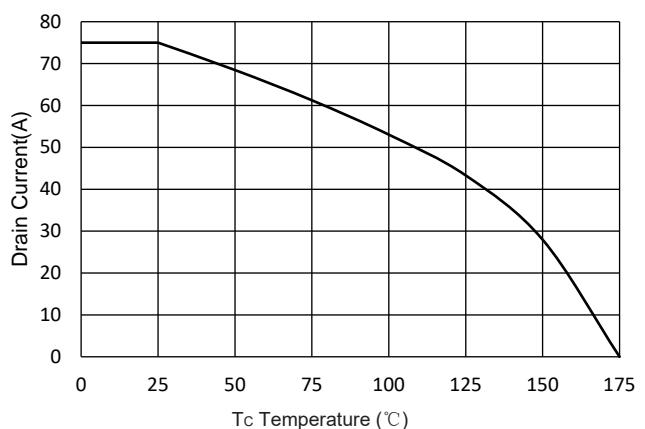
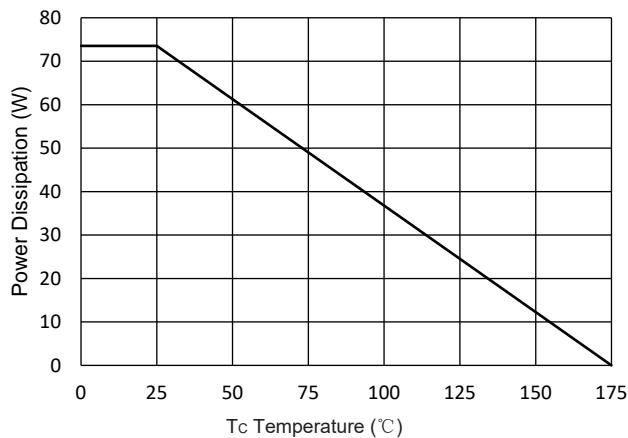


Fig.11 Power Dissipation



## Curve Characteristics

Fig.12 Safe Operation Area

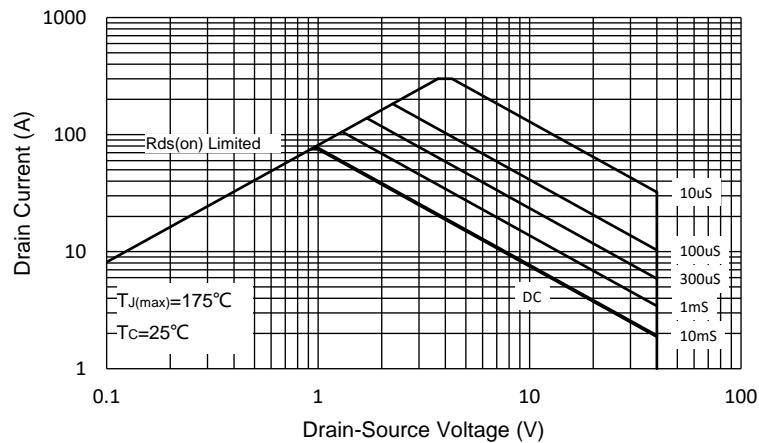
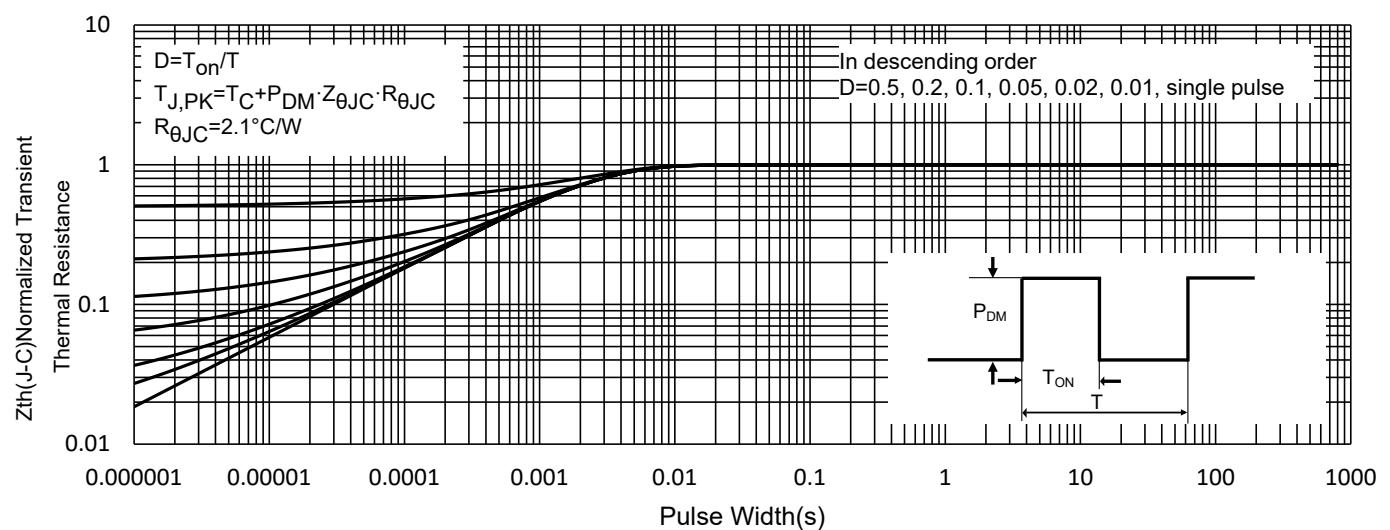


Fig.13 Normalized Transient Thermal Impedance



## Ordering Information

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

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