

## Features

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

## Maximum Ratings

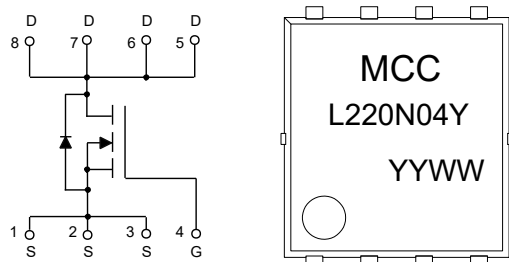
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 54°C/W Junction to Ambient<sup>(Note 2)</sup>
- Thermal Resistance: 1.2°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltlage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	220
		$T_C=100^\circ\text{C}$	156
Pulsed Drain Current <sup>(Note 3)</sup>	$I_{DM}$	880	A
Total Power Dissipation <sup>(Note 4)</sup>	$P_D$	125	W
Single Pulsed Avalanche Energy <sup>(Note 5)</sup>	$E_{AS}$	625	mJ

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. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The Power dissipation  $P_{DSM}$  is based on  $R_{\theta JA}$   $t \leq 10$ s and the maximum allowed junction temperature of 175°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction-case thermal resistance.
5.  $T_J=25^\circ\text{C}$ ,  $V_{DD}=30\text{V}$ ,  $V_G=10\text{V}$ ,  $R_G=25\Omega$ ,  $L=0.5\text{mH}$ .

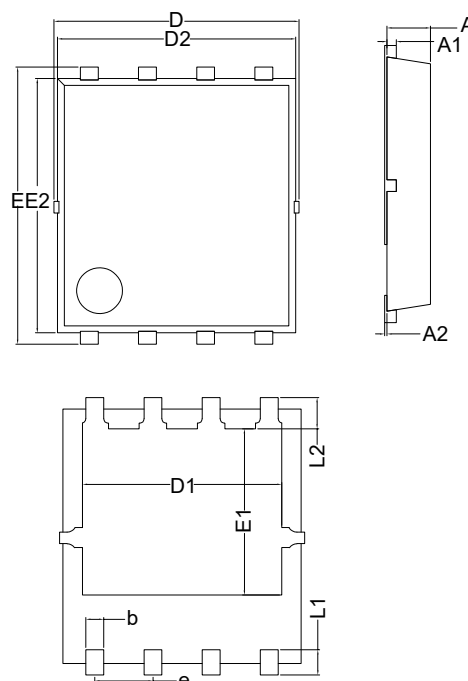
## Internal Structure and Marking Code



YYWW:4 codes in total  
YY is the year  
WW is the week

# N-CHANNEL MOSFET

## DFN5060-C



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
D	0.203	0.218	5.15	5.55	
D2	0.201	0.209	5.10	5.30	
E	0.234	0.242	5.95	6.15	
E2	0.215	0.222	5.45	5.65	
A	0.033	0.041	0.85	1.05	
A1	0.008		0.203		BSC
A2	0.000	0.004	0.00	0.10	
D1	0.167	0.175	4.25	4.45	
E1	0.139	0.147	3.52	3.73	
L1	0.018	0.026	0.45	0.65	
L2	0.027		0.68		BSC
b	0.012	0.020	0.30	0.50	
e	0.050		1.27		BSC

**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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.7	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		0.95	1.3	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$		1.3	2	
Gate Resistance	$R_g$	f=1 MHz, Open drain		1.2		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				220	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$		0.8	1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=40A, di_F/dt=100A/\mu s$		52		ns
Reverse Recovery Charge	$Q_{rr}$			59		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		7216		pF
Output Capacitance	$C_{oss}$			1318		
Reverse Transfer Capacitance	$C_{rss}$			59		
Total Gate Charge	$Q_g$	$V_{DS}=20V, V_{GS}=10V, I_D=100A$		131		nC
Gate-Source Charge	$Q_{gs}$			31		
Gate-Drain Charge	$Q_{gd}$			24		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=20V, V_{GS}=10V,$ $R_{GEN}=3\Omega, I_{DS}=100A$		20		ns
Turn-On Rise Time	$t_r$			35		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	$t_f$			31		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

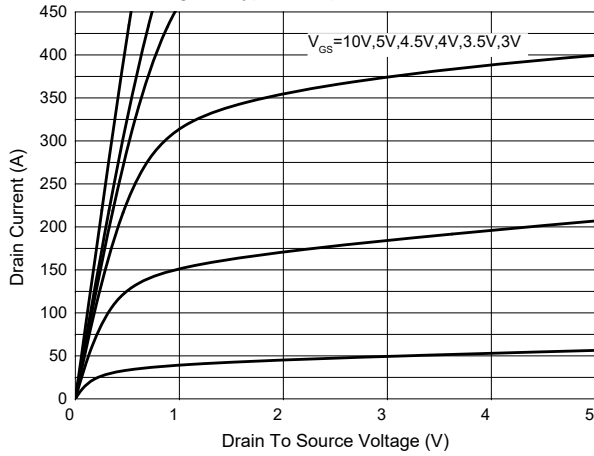


Fig.2 Transfer Characteristic

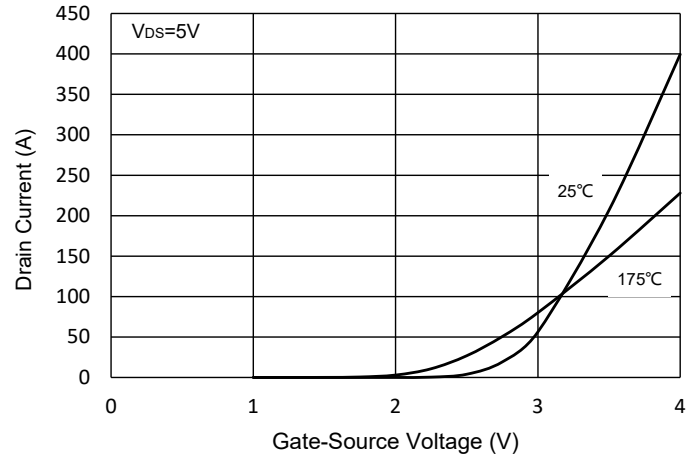


Fig.3  $R_{DS(on)}$ - $V_{GS}$

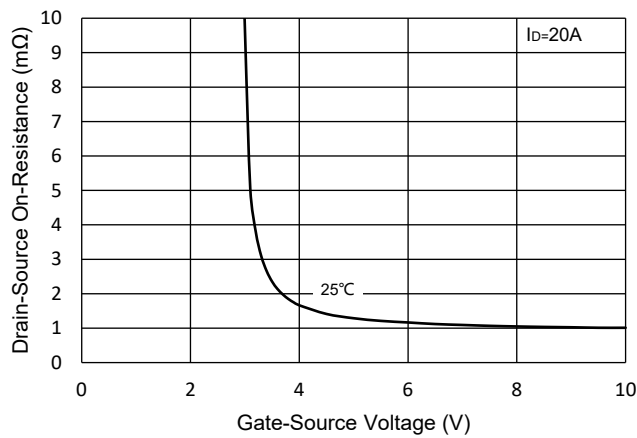


Fig. 4 -  $R_{DS(ON)}$  -  $I_D$

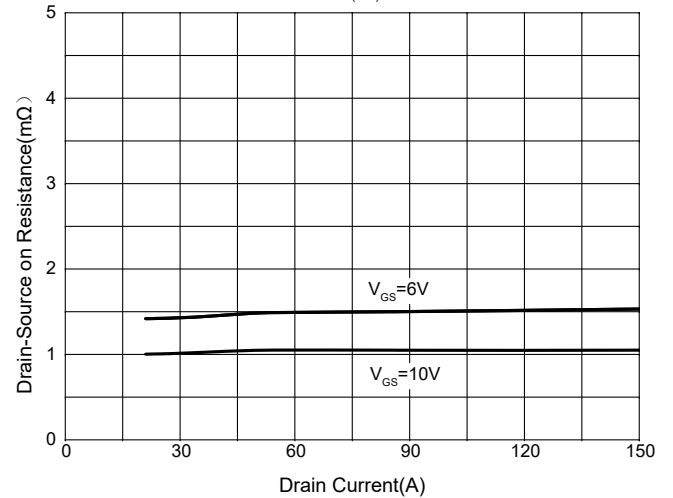


Fig.5 Capacitance Characteristics

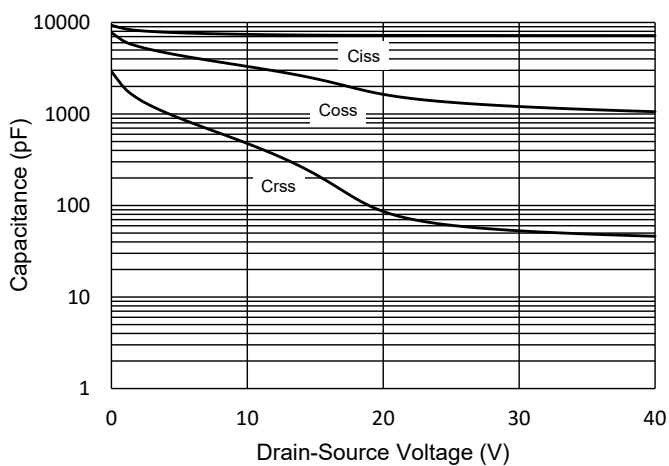
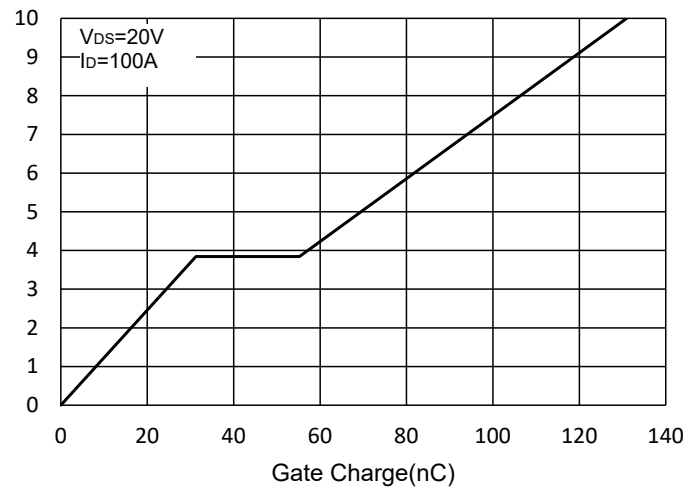


Fig.6 Gate Charge



**Curve Characteristics**

Fig.7 Normalized Threshold Voltage

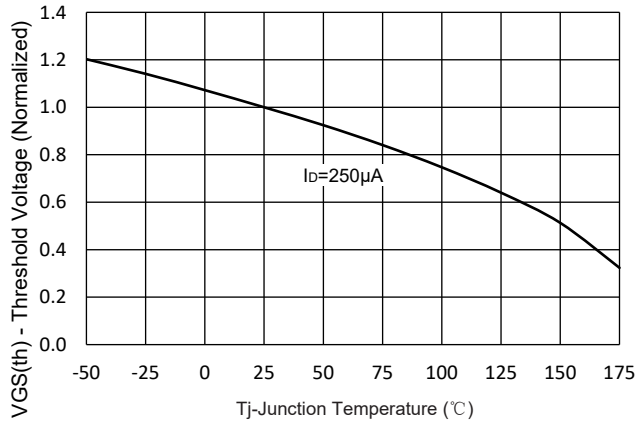


Fig.8 Normalized On Resistance Characteristics

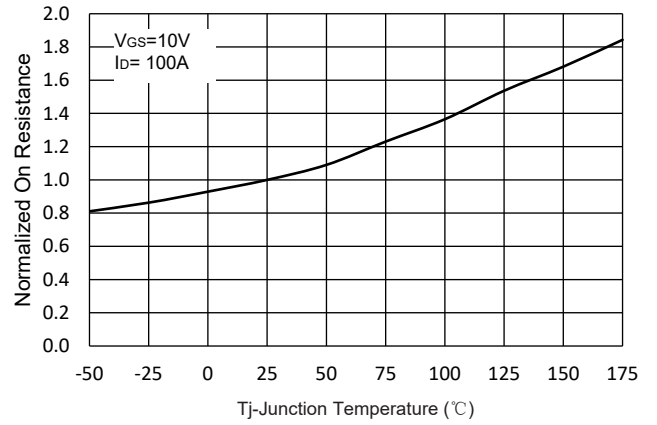


Fig.9 IS-VSD

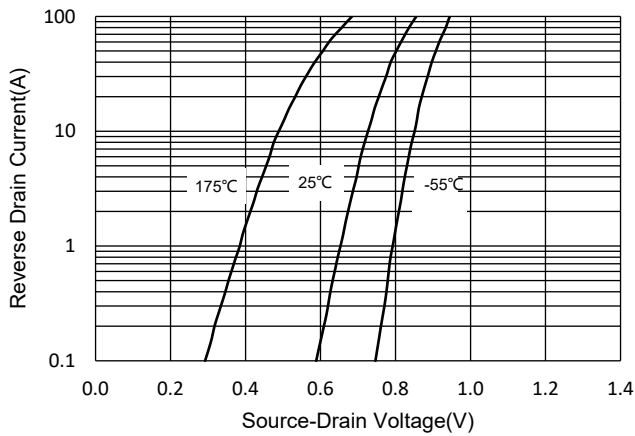


Fig. 10 - Drain Current

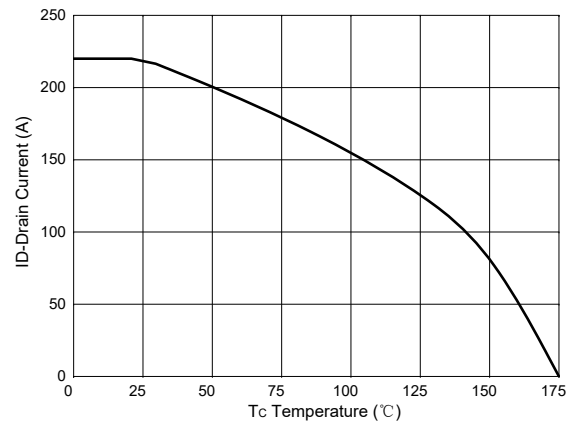
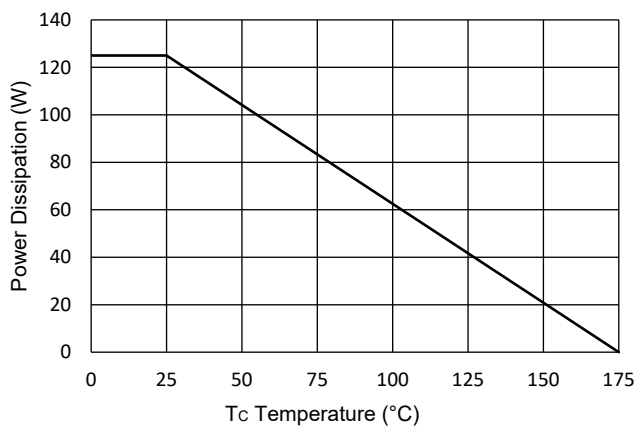


Fig.11 Power Dissipation



## Curve Characteristics

Fig.12 Safe Operation Area

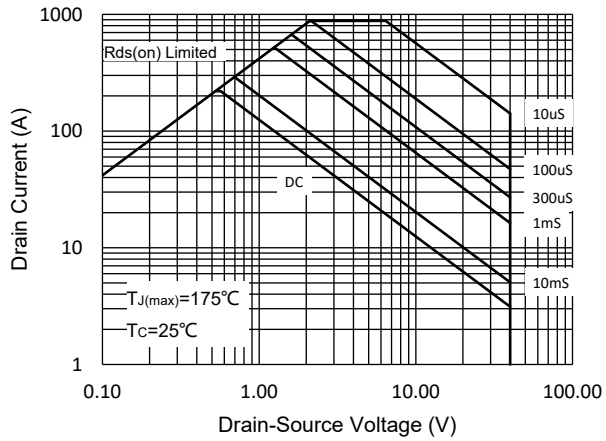
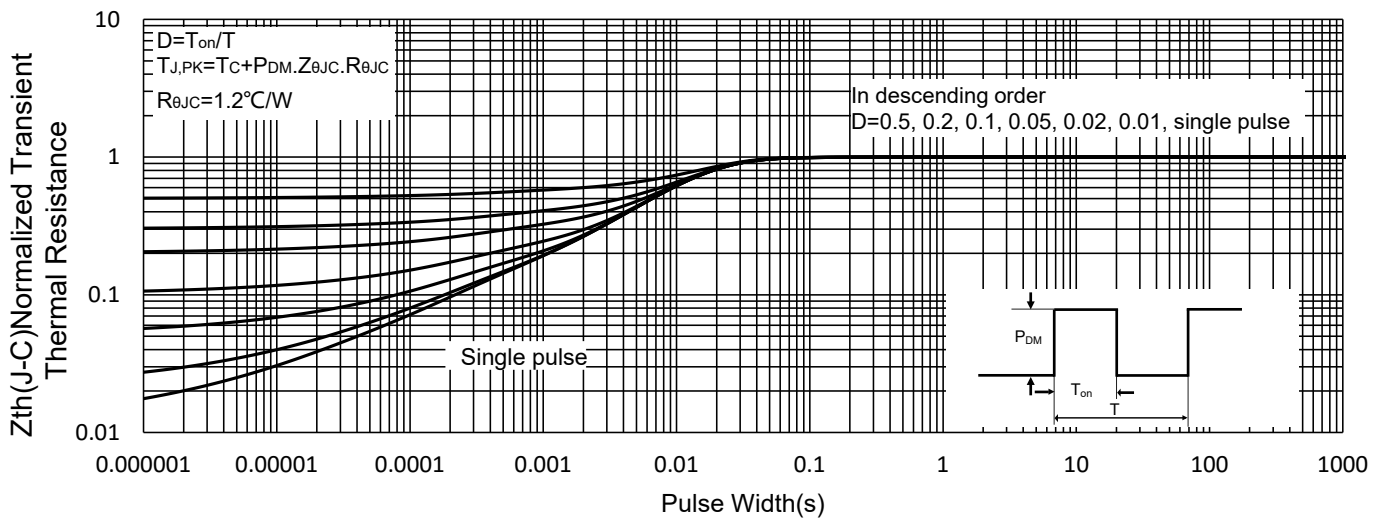


Fig.13 Normalized Transient Thermal Impedance



## Ordering Information

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

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