

Features

- Split Gate Trench Mosfet Technology
- Fully Automotive Qualified to AEC-Q101
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(on)}$
- 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

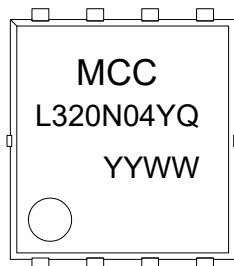
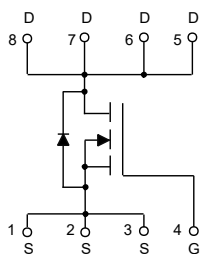
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 25°C/W Junction to Ambient^(Note 2)
- Thermal Resistance: 0.65°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	320
		$T_C=100^\circ\text{C}$	226
Pulsed Drain Current ^(Note 3)	I_{DM}	1280	A
Total Power Dissipation ^(Note 4)	P_D	230	W
Avalanche Energy ^(Note 5)	E_{AS}	541	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 1in² 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 $R_{\theta JA} t \leq 10\text{s}$ 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. $T_J=25^\circ\text{C}$, $V_{DD}=30\text{V}$, $V_{GS}=10\text{V}$, $L=3\text{mH}$.

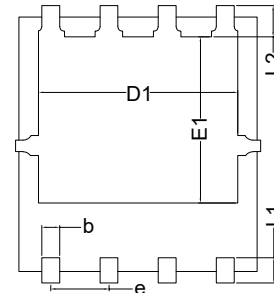
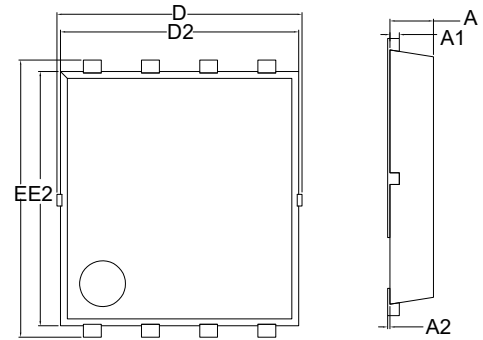
Internal Structure and Marking Code



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
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=1mA$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=75A$		0.85	1.1	m Ω
		$V_{GS}=6V, I_D=20A$		1.1	1.5	
Gate Resistance	R_g	$V_{GS}=0V, f=1MHz$		2.7		Ω
Dynamic Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$		0.8	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=50A, di/dt=100A/us$		58		ns
Body Diode Reverse Recovery charge	Q_{rr}			63		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		6914		pF
Output Capacitance	C_{oss}			1875		
Reverse Transfer Capacitance	C_{rss}			318		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=50A$		88		nC
Gate-Source Charge	Q_{gs}			29		
Gate-Drain Charge	Q_{gd}			10		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=20V, R_G=2.5\Omega, I_D=50A$		17		ns
Turn-On Rise Time	t_r			12		
Turn-Off Delay Time	$t_{d(off)}$			56		
Turn-Off Fall Time	t_f			25		

Fig. 1 - Typical Output Characteristics

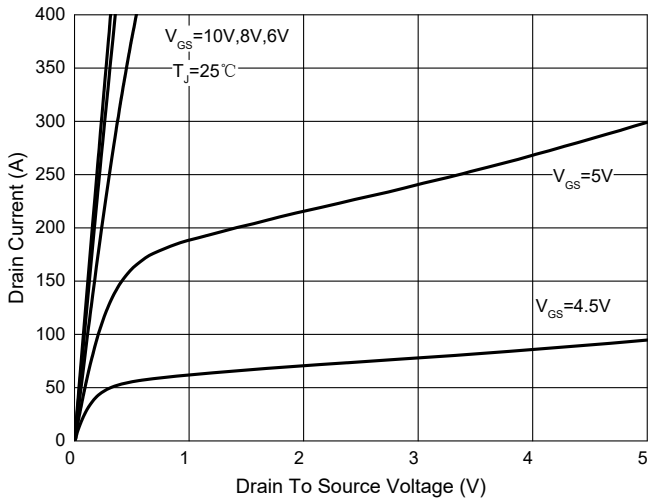


Fig. 2 - Transfer Characteristics

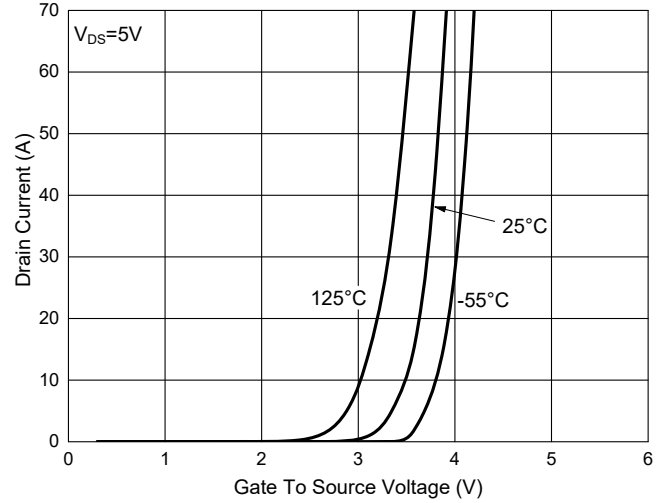


Fig. 3 - $R_{DS(ON)} - V_{GS}$

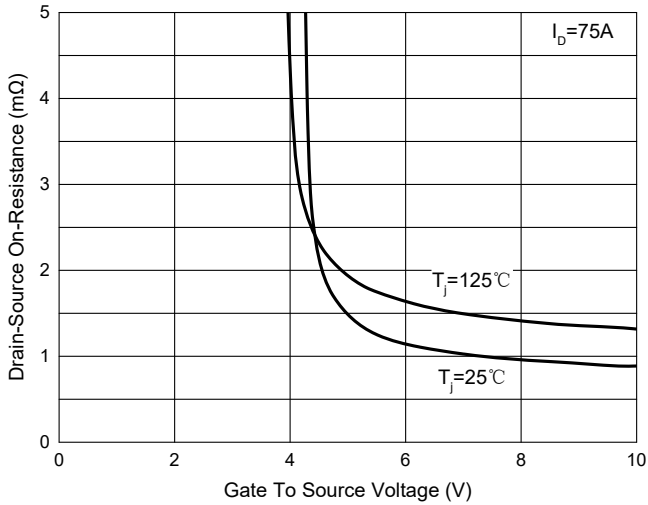


Fig. 4 - Normalized On Resistance Characteristics

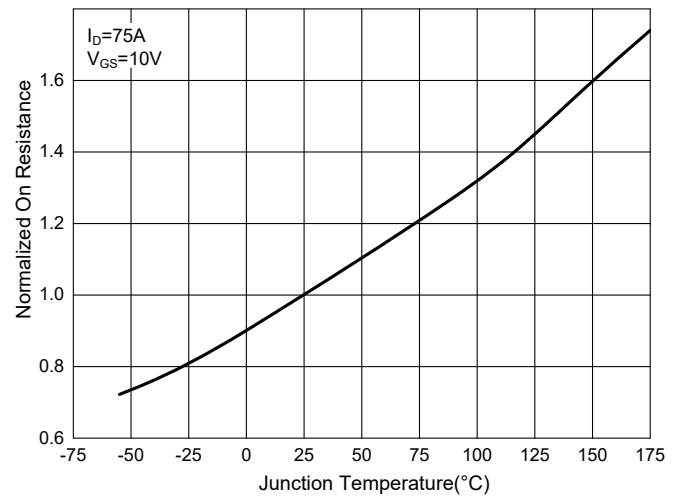


Fig. 5 - Capacitance Characteristics

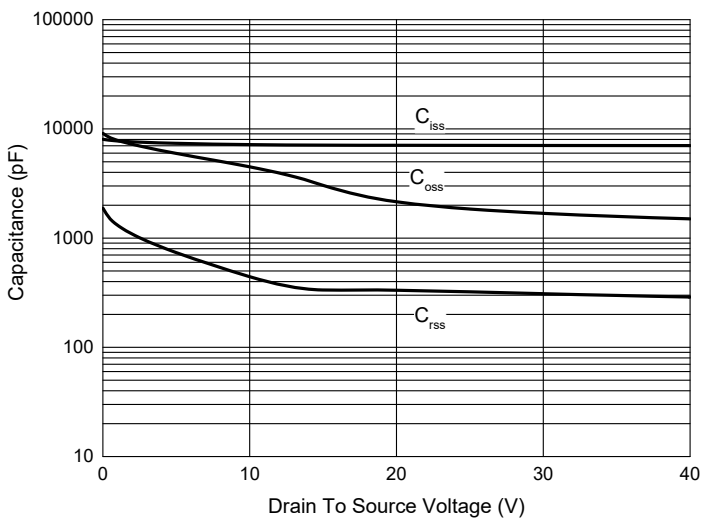


Fig. 6 - Gate Charge

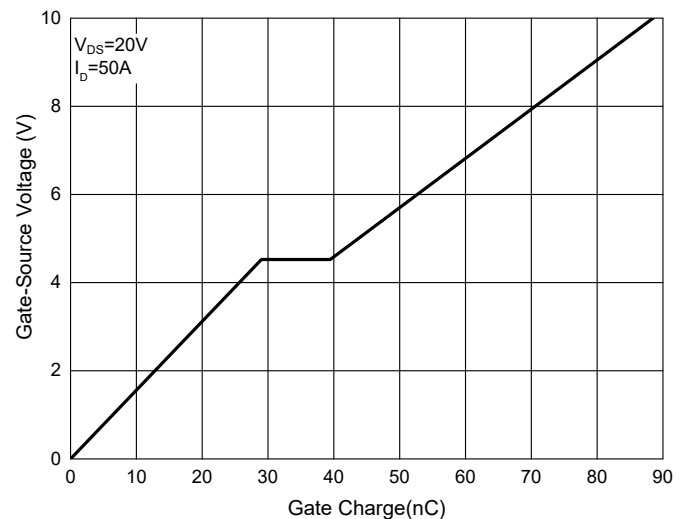


Fig. 7 - $R_{DS(ON)} - I_D$

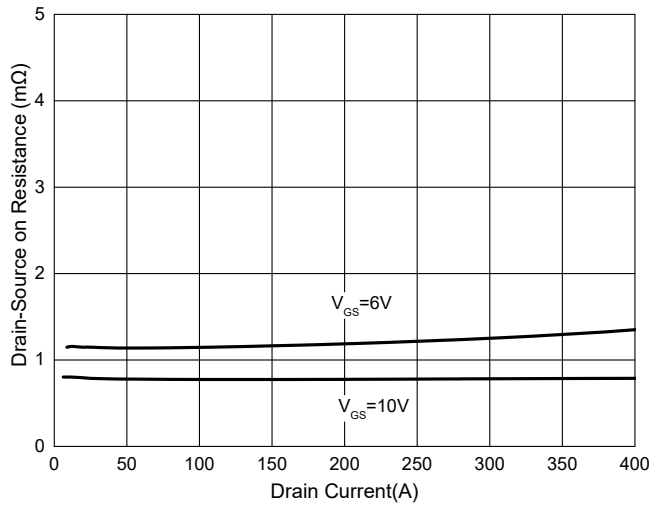


Fig. 8 - Normalized Threshold voltage

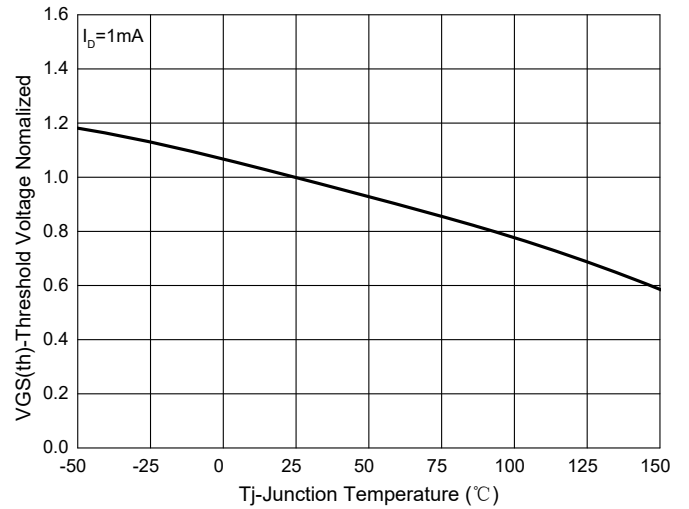


Fig. 9 - $I_S - V_{SD}$

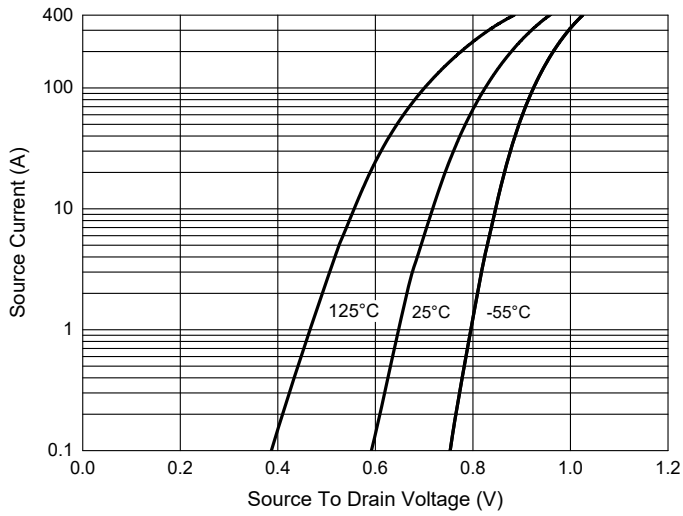


Fig. 10 - Current dissipation

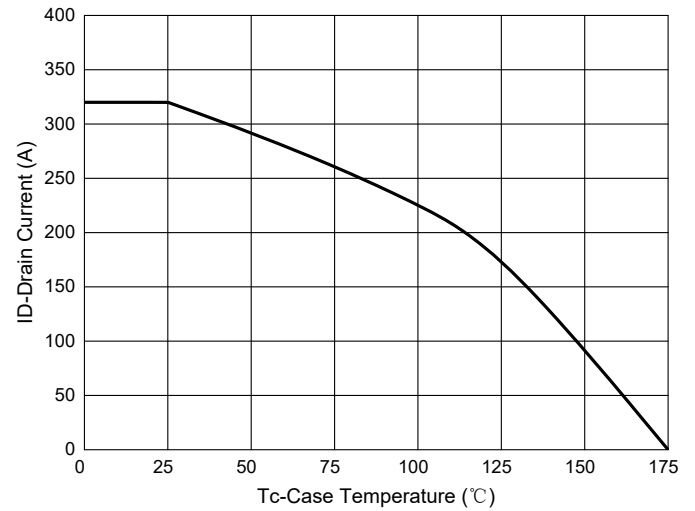


Fig. 11 - PD— T_J

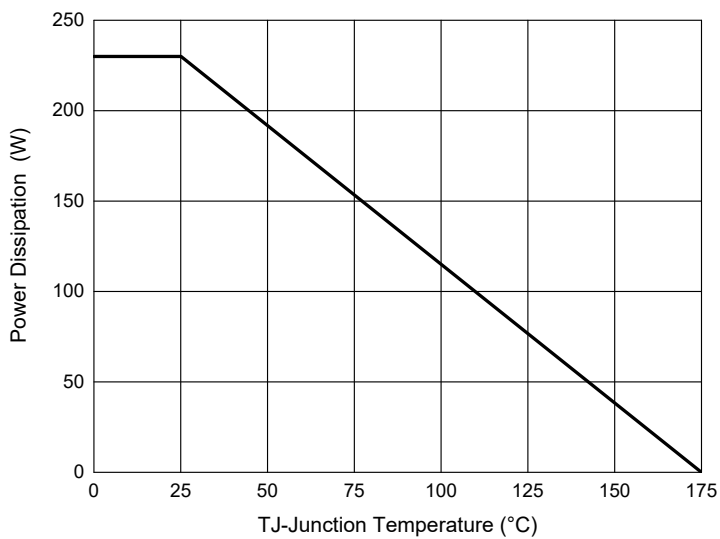


Fig. 12 - Safe Operation Area

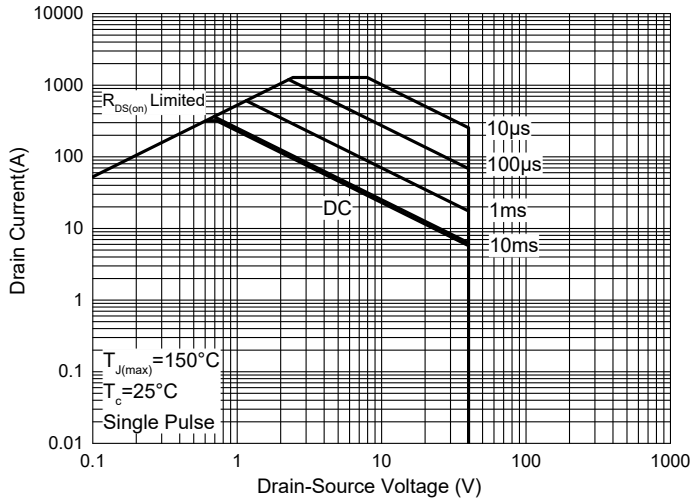
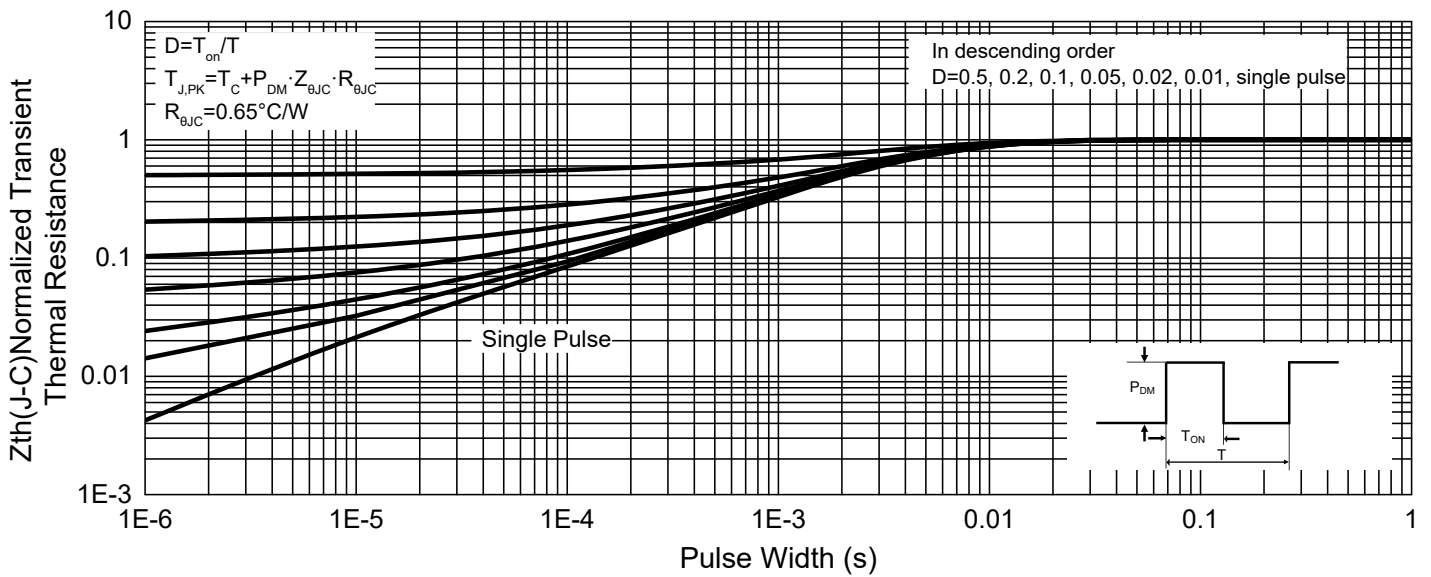


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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