

Features

- Fully Automotive Qualified to AEC-Q101
- Split Gate Trench MOSFET Technology
- High Density Cell Design For Ultra Low $R_{DS(on)}$
- Moisture Sensitivity Level 1
- Halogen Free "Green" Device^(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

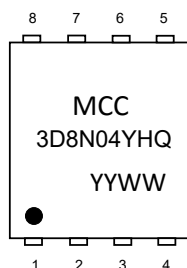
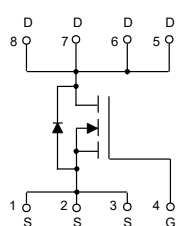
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 55°C/W Junction to Ambient^(Note2)
- Thermal Resistance: 1.8°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	40	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	110	A
	T _C =100°C		77	
Pulsed Drain Current ^(Note3)		I _{DM}	440	A
Total Power Dissipation ^(Note4)		P _D	83	W
Single Pulsed Avalanche Energy ^(Note 5)		E _{AS}	273	mJ

Note:

- Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 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 $T_A=25^\circ\text{C}$.
- Repetitive rating; pulse width limited by max. junction temperature.
- P_D is based on max. junction temperature, using junction-case thermal resistance.
- $T_J=25^\circ\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=3\text{mH}$.

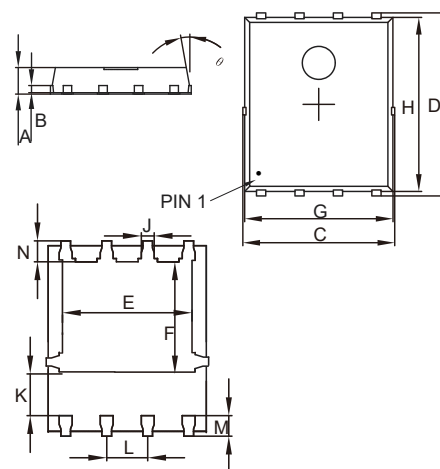
Internal Structure and Marking Code



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

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	0.219	4.90	5.55	
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 _{(BR)DSS}	V _{GS} =0V, I _D =250μA	40			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±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 =250μA	2.2	3.0	3.8	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =39A		3	3.8	mΩ
Gate Resistance	R _G	f=1MHz, Open drain		3		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				110	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =39A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =20A,di/dt=100A/μs		25		ns
Reverse Recovery Charge	Q _{rr}			16		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f=1MHz		1745		pF
Output Capacitance	C _{oss}			580		
Reverse Transfer Capacitance	C _{rss}			18		
Total Gate Charge	Q _g	V _{DS} =20V,V _{GS} =10V,I _D =20A		23		nC
Gate-Source Charge	Q _{gs}			7.5		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, R _G =2.7Ω, I _D =20A		13		ns
Turn-On Rise Time	t _r			61		
Turn-Off Delay Time	t _{d(off)}			24		
Turn-Off Fall Time	t _f			8.3		

Curve Characteristics

Fig.1 - Typical Output Characteristics

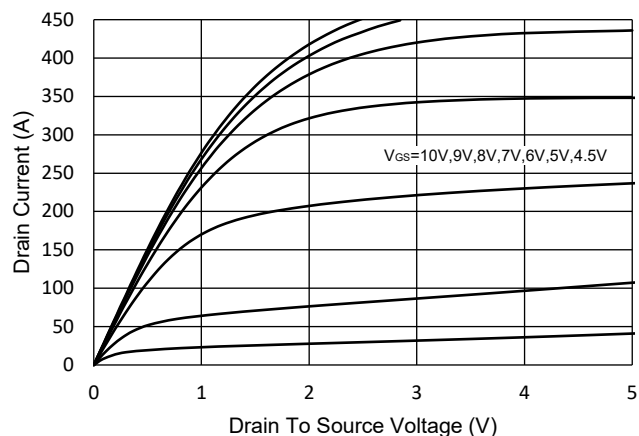


Fig. 2 - Transfer Characteristics

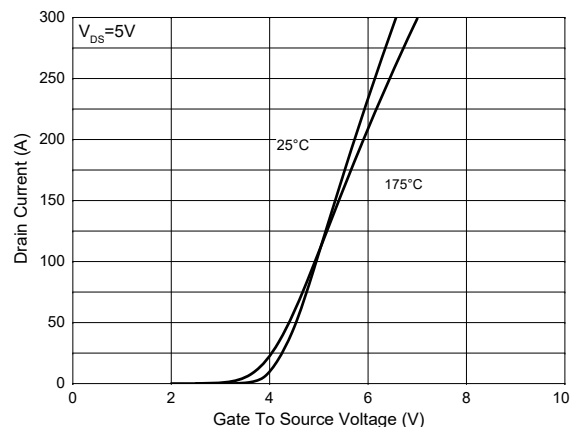


Fig. 3 - $R_{DS(ON)}$ - V_{GS}

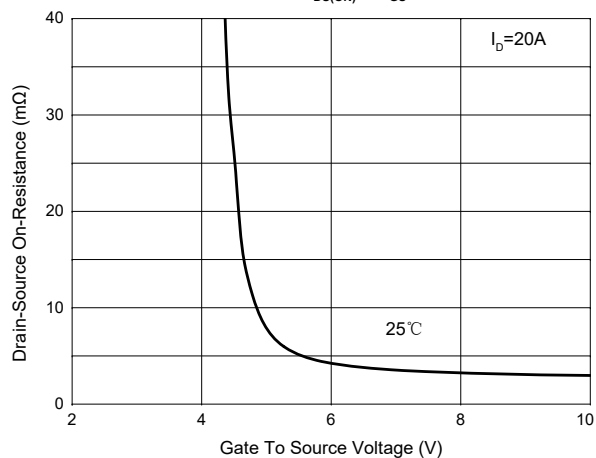


Fig.4 - $R_{DS(ON)}$ - I_D

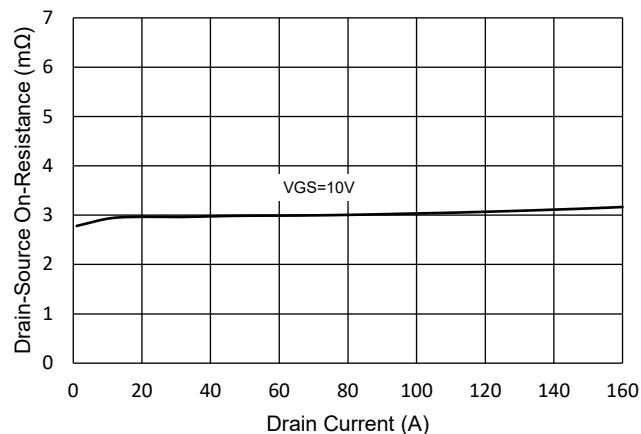


Fig.5 - Capacitance Characteristics

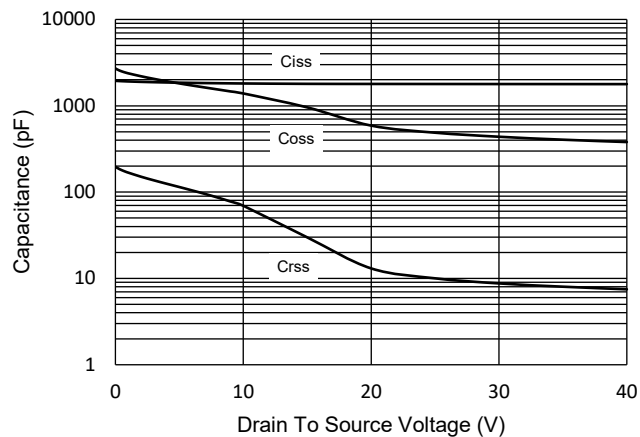
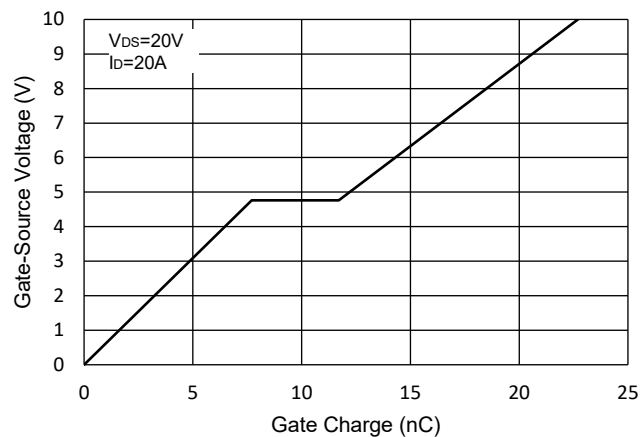


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

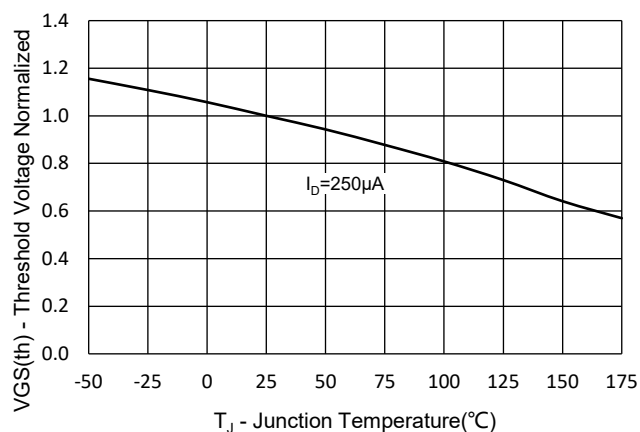


Fig.8 - Normalized On Resistance Characteristics

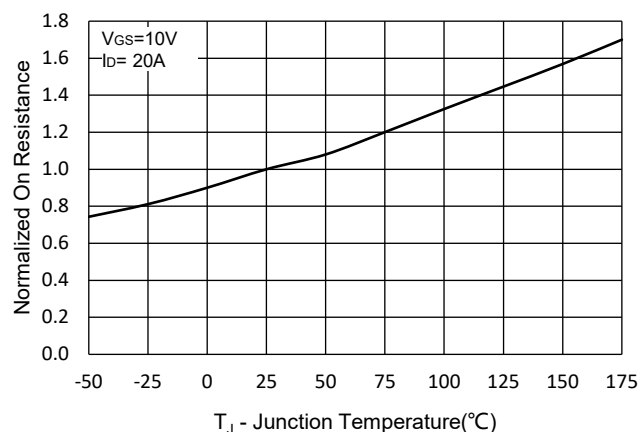


Fig.9 - I_S - V_{SD}

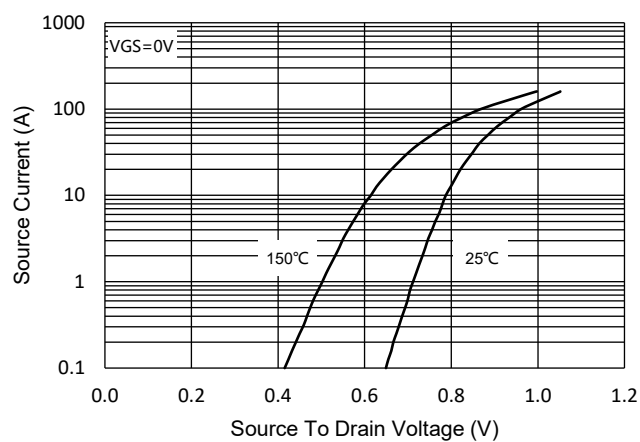


Fig.10 - Drain Current

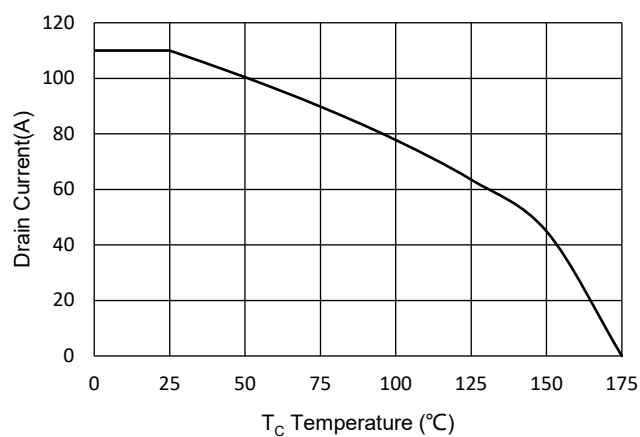
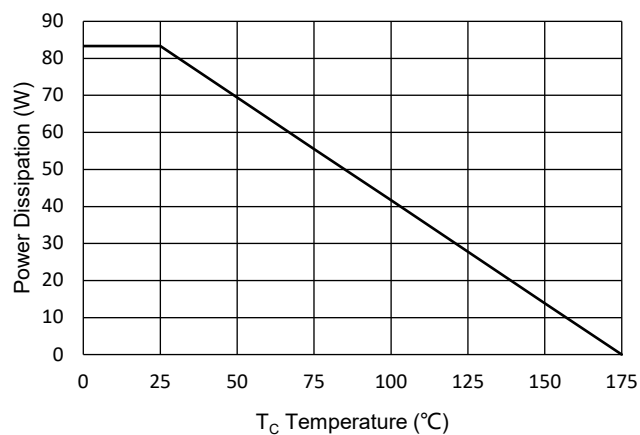


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

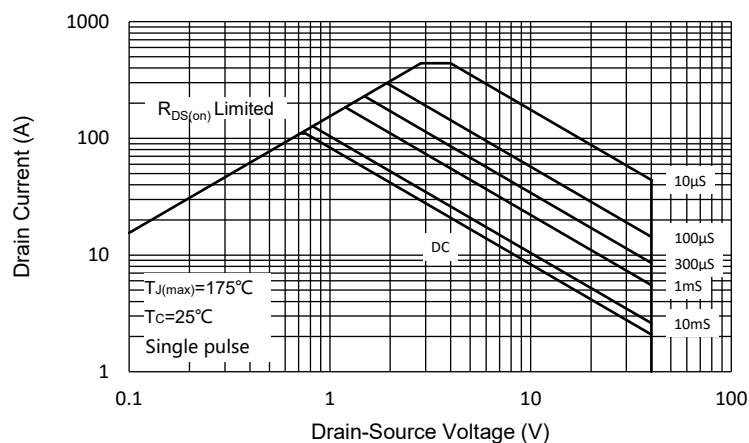
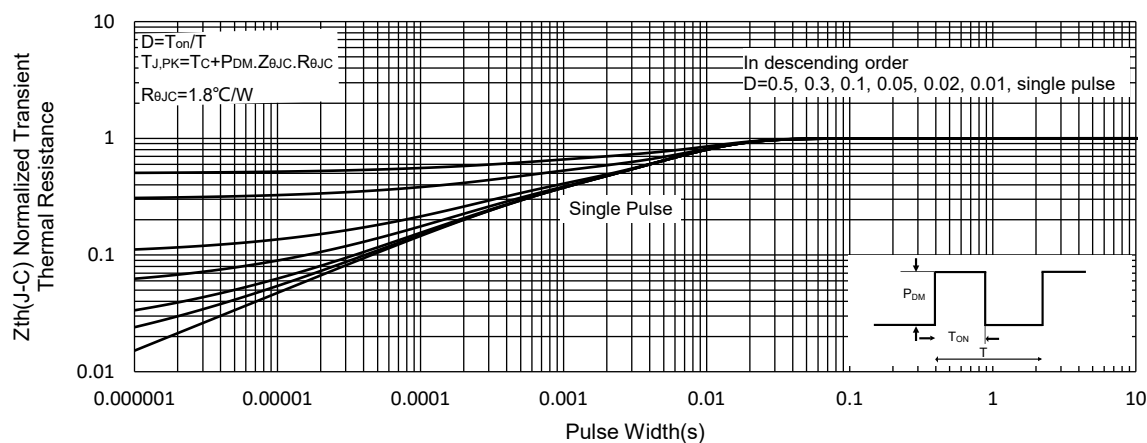


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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