

Features

- Split Gate Trench MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free."Green"Device^(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant^(Note2)("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

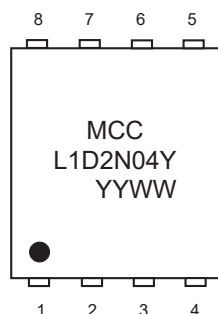
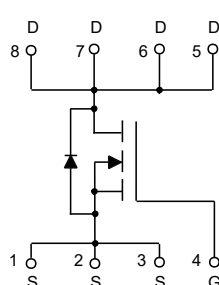
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 52°C/W Junction to Ambient^(Note3)
- Thermal Resistance: 0.65°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	40	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	321	A
	T _C =100°C		227	
Pulsed Drain Current ^(Note4)		I _{DM}	1284	A
Total Power Dissipation ^(Note5)		P _D	230	W
Single Pulsed Avalanche Energy ^(Note6)		E _{AS}	529	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. High Temperature Solder Exemption Applied, see EU Directive Annex 7(a)-I.
3. 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 $T_A=25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-case thermal resistance.
6. $T_J=25^\circ\text{C}$, $V_{DS}=20\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

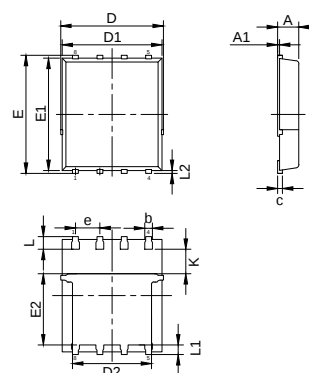
Internal Structure and Marking Code



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

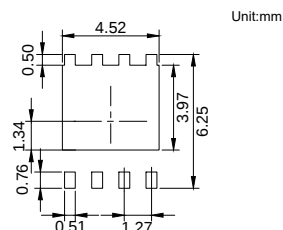
N-CHANNEL MOSFET

PDFN5060



DIM	INCH		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.039	0.052	1.00	1.30	
A1	0.000	0.004	0.00	0.10	
b	0.011	0.022	0.30	0.55	x8
c	0.010		0.25		TYP
D	0.192	0.219	4.90	5.55	
D1	0.185	0.215	4.70	5.45	
D2	0.149	0.171	3.80	4.32	
E	0.228	0.250	5.80	6.35	
E1	0.220	0.239	5.60	6.06	
E2	0.129	0.155	3.30	3.92	
e	0.050		1.27		TYP
K	0.053		1.34		TYP
L	0.011	0.030	0.30	0.76	
L1	0.015	0.030	0.40	0.75	
L2	0.006		0.15		TYP

Suggested Solder Pad Layout



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	2.0	2.9	3.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A		0.9	1.2	mΩ
Gate Resistance	R _g	f=1 MHz, Open Drain		2.6		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				321	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =50A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =50A, dI _F /dt=100A/μs		53		ns
Reverse Recovery Charge	Q _{rr}			53.3		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f=1MHz		5288		pF
Output Capacitance	C _{oss}			3724		
Reverse Transfer Capacitance	C _{rss}			98		
Total Gate Charge	Q _g	V _{DS} =20V,V _{GS} =10V,I _D =50A		74.1		nC
Gate-Source Charge	Q _{gs}			24		
Gate-Drain Charge	Q _{gd}			14.9		
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V R _G =3Ω, I _D =50A		21.3		ns
Turn-On Rise Time	t _r			159		
Turn-Off Delay Time	t _{d(off)}			49.6		
Turn-Off Fall Time	t _f			27.1		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

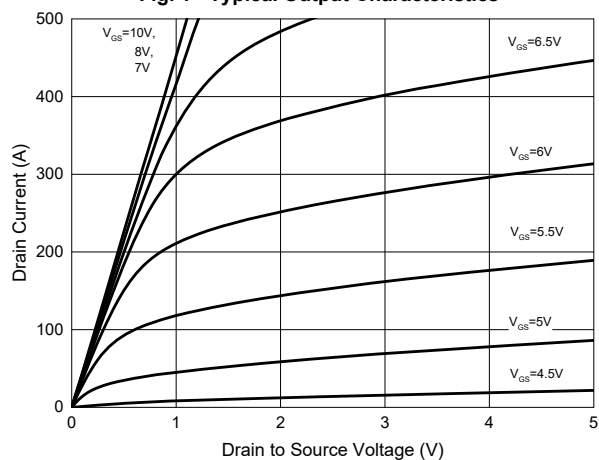


Fig. 2 - Transfer Characteristics

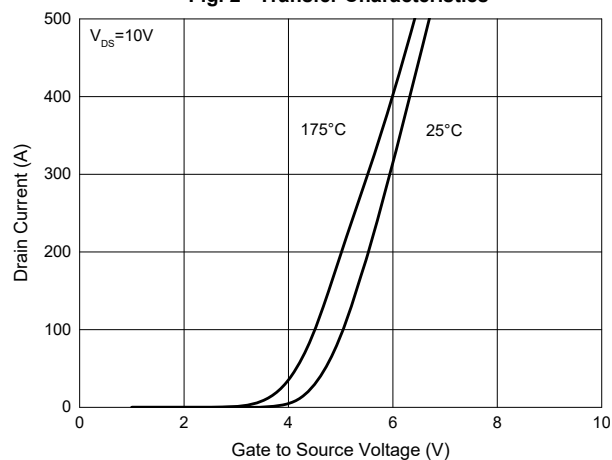


Fig. 3 - $R_{DS(ON)} - V_{GS}$

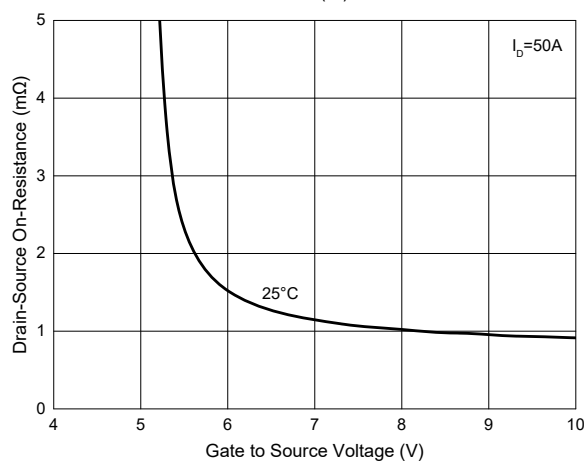


Fig. 4 - $R_{DS(ON)} - I_D$

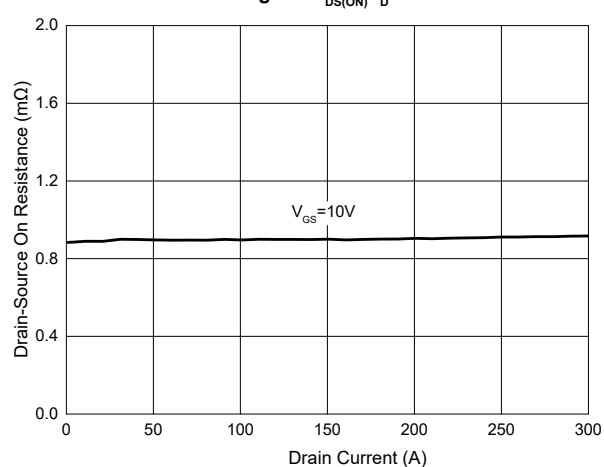


Fig. 5 - Capacitance Characteristics

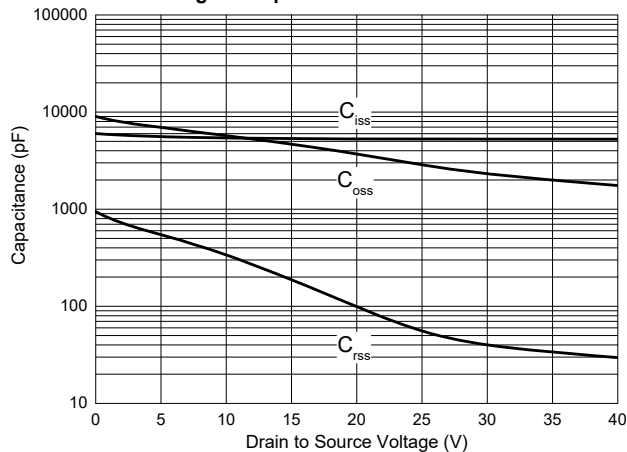
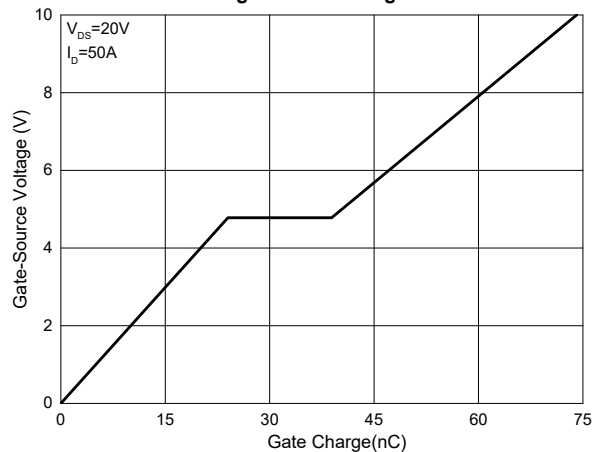


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

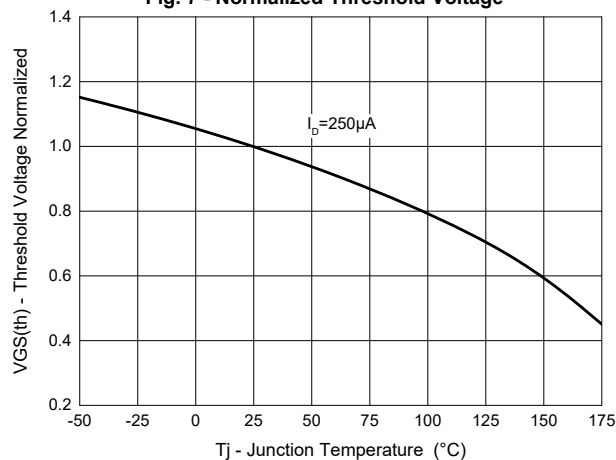


Fig. 8 - Normalized On Resistance Characteristics

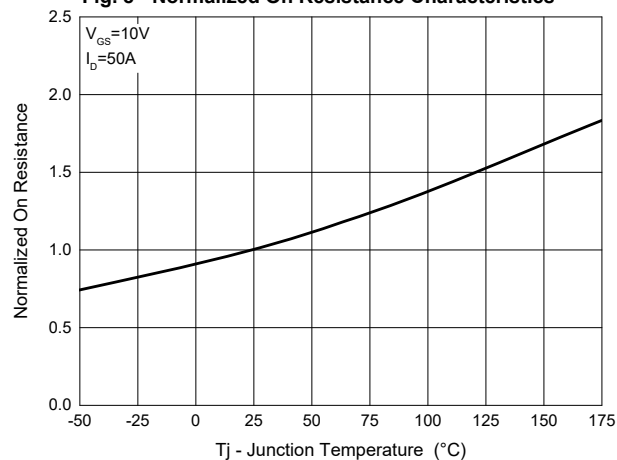


Fig. 9 - I_S - V_{SD}

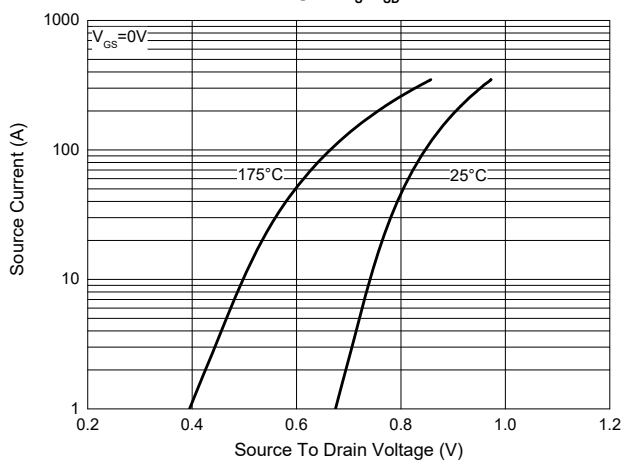


Fig. 10 - Drain Current

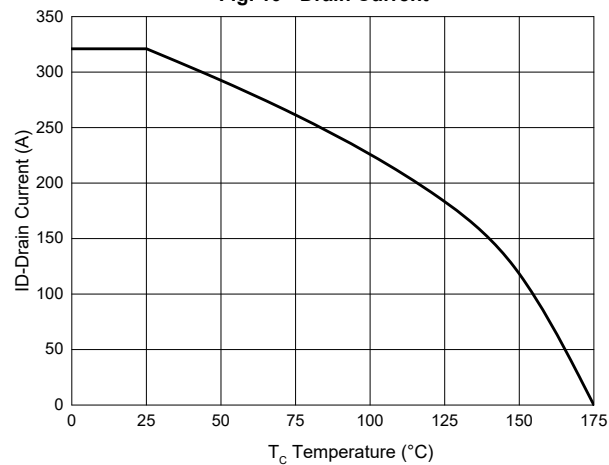
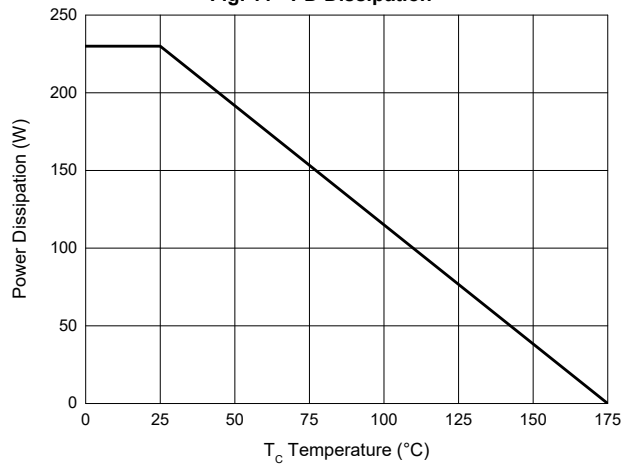


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

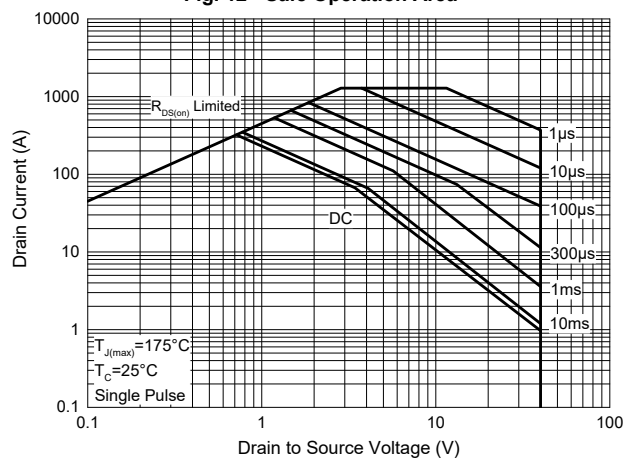
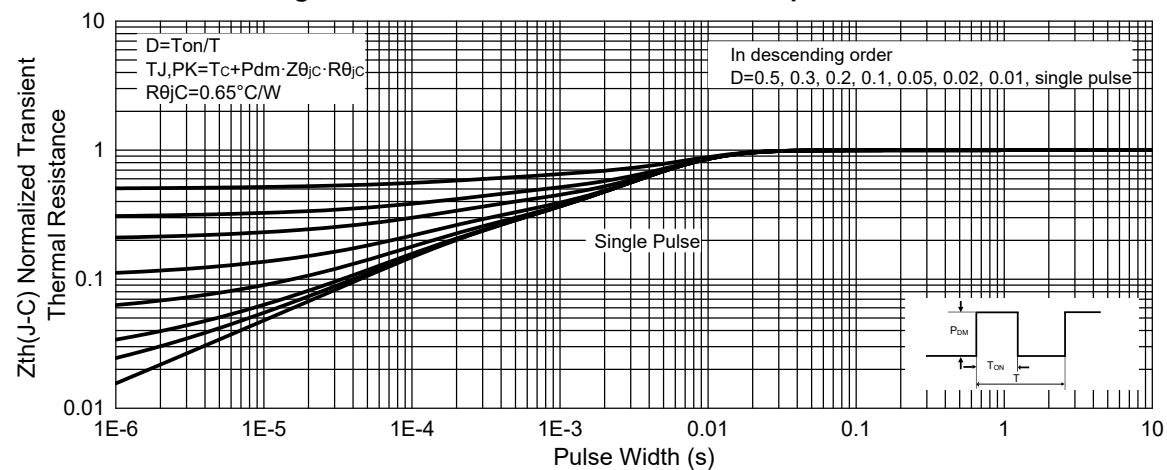


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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