

Features

- AEC-Q101 Qualified
- Trench Power LV MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- 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)
- Moisture Sensitivity Level 3

Maximum Ratings

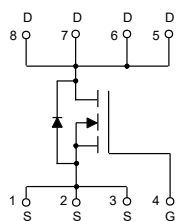
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 3.1°C/W Junction to Case
- Thermal Resistance: 55°C/W Junction to Ambient^(Note2)

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	35	A
	T _C =100°C		22	
Pulsed Drain Current ^(Note3)		I _{DM}	160	A
Total Power Dissipation ^(Note4)		P _D	40	W
Single Pulsed Avalanche Energy ^(Note5)		E _{AS}	120	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 $T_A=25^{\circ}\text{C}$.
3. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.
4. P_d is based on max. junction temperature, using junction-case thermal resistance.
5. $V_{DD}=40\text{V}$, $R_G=25\Omega$, $L=1\text{mH}$

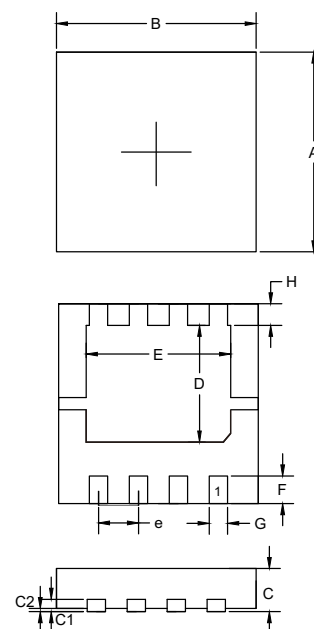
Internal Structure and Marking Code



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

N-CHANNEL MOSFET

DFN3333



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.126	0.130	3.20	3.30	
B	0.126	0.130	3.20	3.30	
C	0.030	0.033	0.75	0.85	
C1	0.007	0.009	0.18	0.22	
C2	---	0.002	---	0.05	
D	0.071	0.079	1.80	2.00	
E	0.087	0.098	2.20	2.50	
F	0.016	0.020	0.40	0.50	
G	0.010	0.014	0.25	0.35	
H	0.012	0.016	0.30	0.40	
e	0.024	0.028	0.60	0.70	

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	1.0	1.5	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		5.3	8	mΩ
		V _{GS} =4.5V, I _D =10A		7.2	13	
Gate Resistance	R _g	F=1MHz, Open Drain		1.7		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				35	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =20A, dI _F /dt=300A/μs		13		ns
Reverse Recovery Charge	Q _{rr}			11		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		2000		pF
Output Capacitance	C _{oss}			190		
Reverse Transfer Capacitance	C _{rss}			170		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A		23		nC
Gate-Source Charge	Q _{gs}			3.5		
Gate-Drain Charge	Q _{gd}			7		
Turn-On Delay Time	t _{d(on)}	V _{DS} =20V, V _{GS} =10V, I _{DS} =20A		4		ns
Turn-On Rise Time	t _r			57.5		
Turn-Off Delay Time	t _{d(off)}			20.2		
Turn-Off Fall Time	t _f			2.65		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

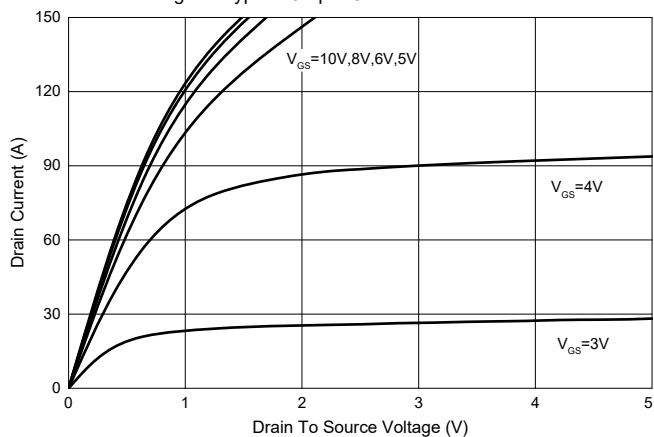


Fig. 2 - Transfer Characteristics

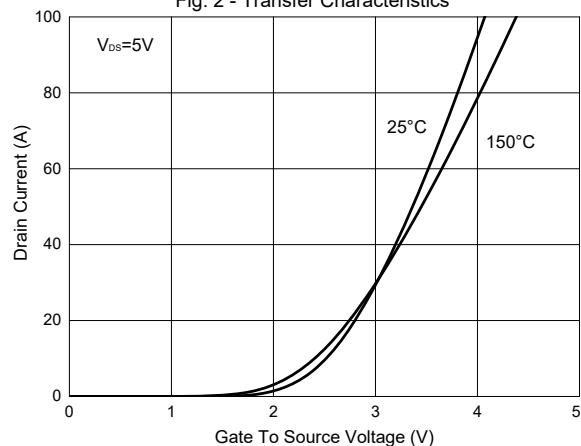


Fig. 3 - $R_{DS(ON)} - V_{GS}$

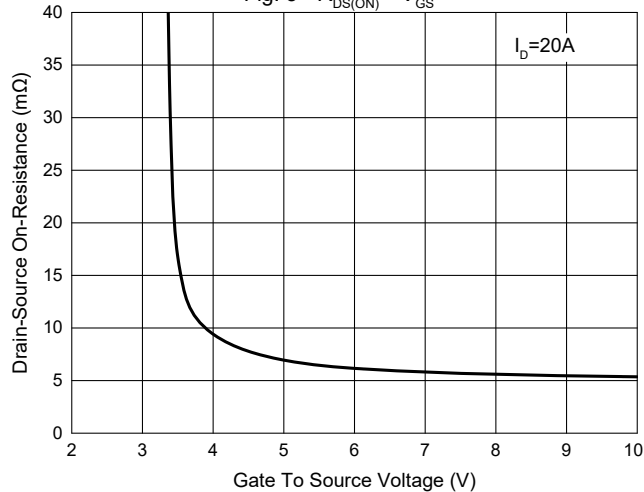


Fig. 4 - $R_{DS(ON)} - I_D$

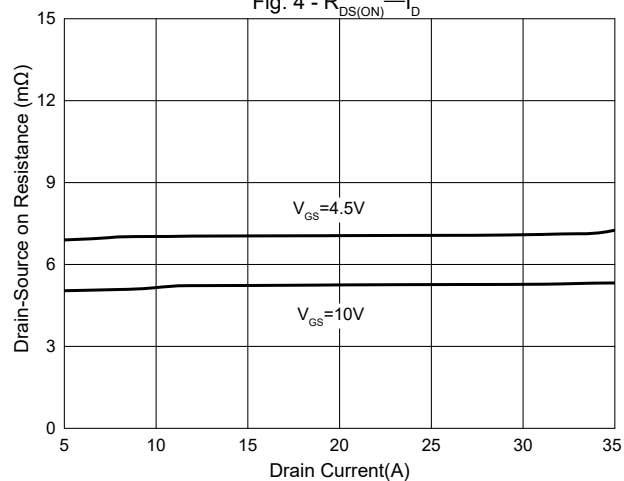


Fig. 5 - Gate Charge

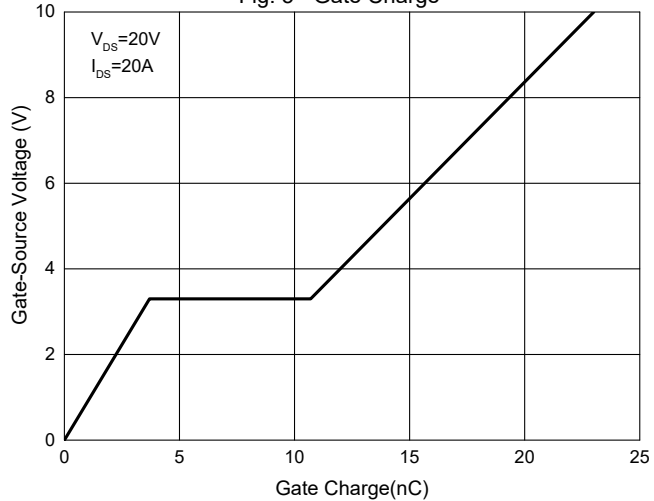
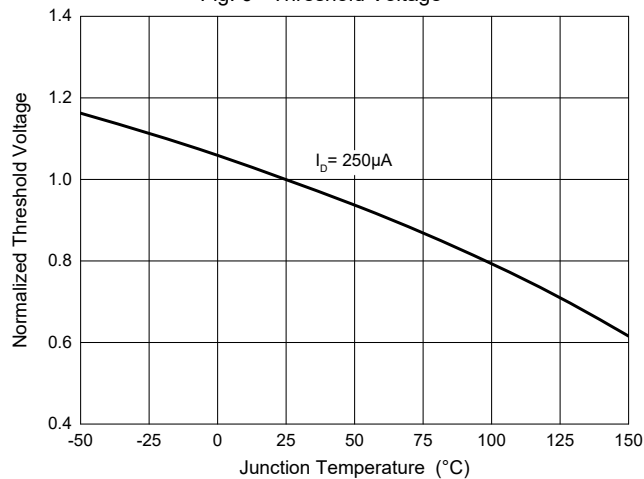
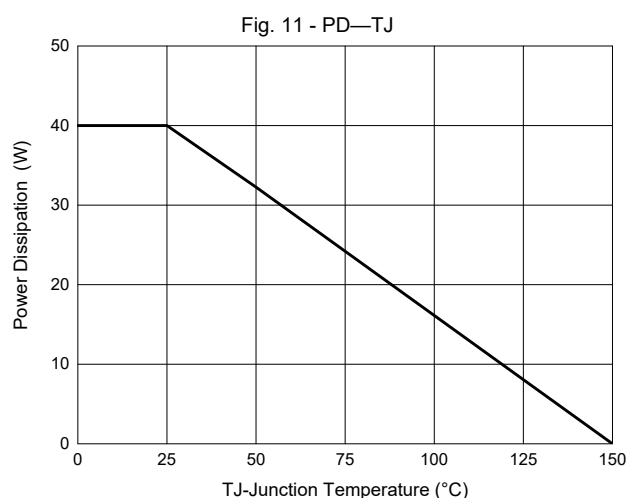
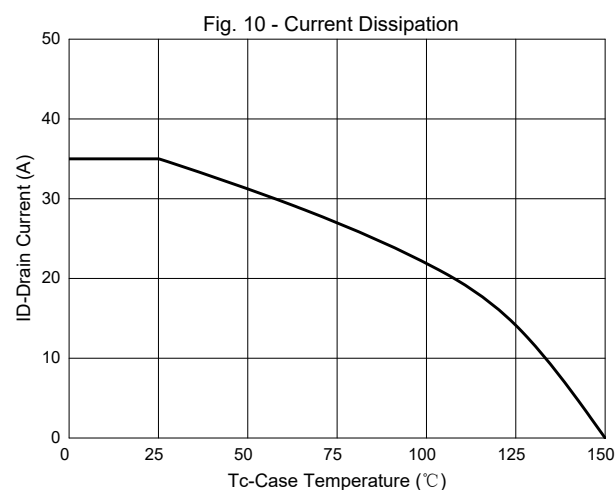
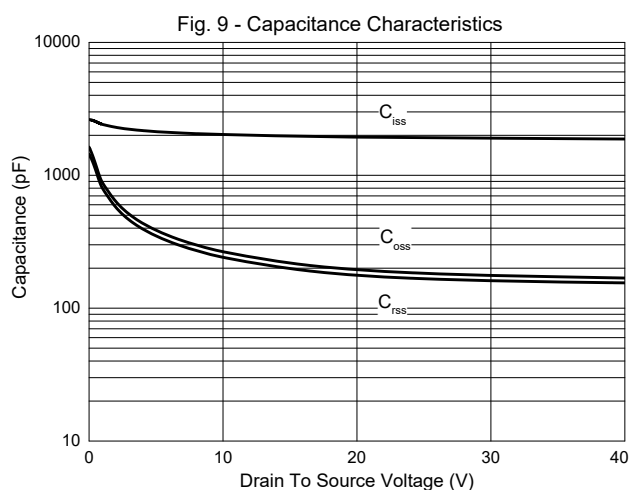
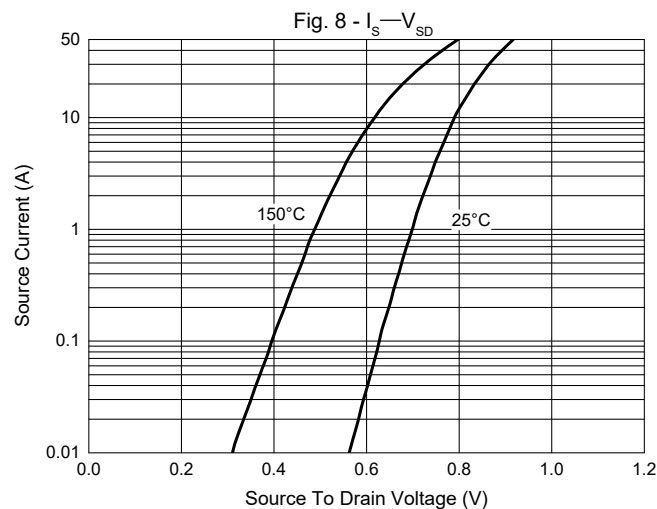
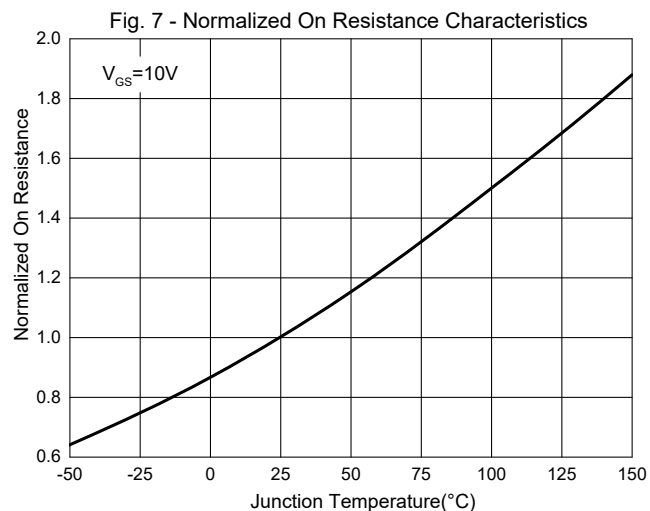


Fig. 6 - Threshold Voltage



Curve Characteristics



Curve Characteristics

Fig. 12 - Safe Operation Area

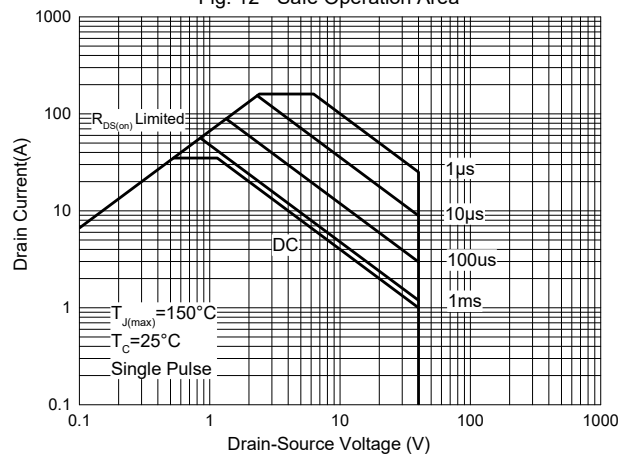
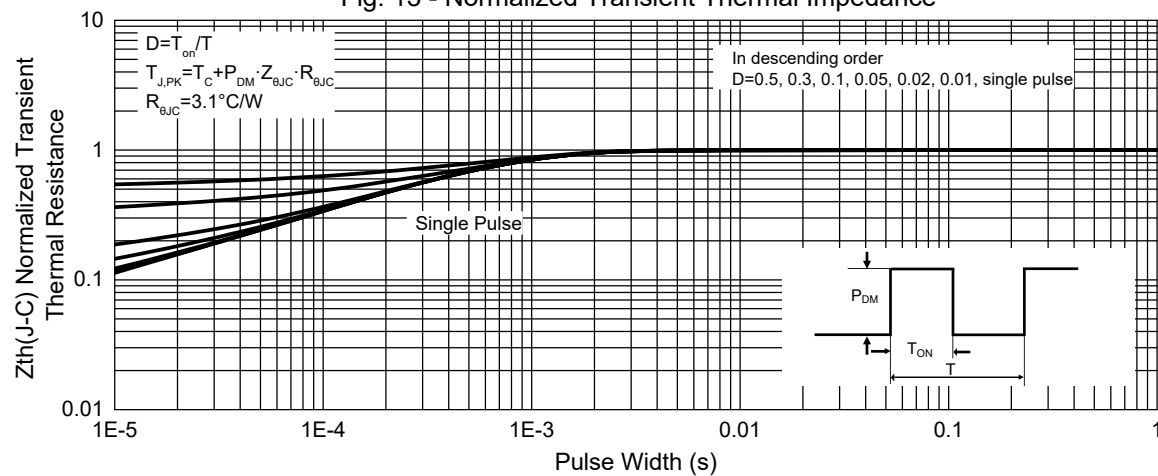


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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