Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- Moisture Sensitivity 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)

N-CHANNEL MOSFET

Maximum Ratings

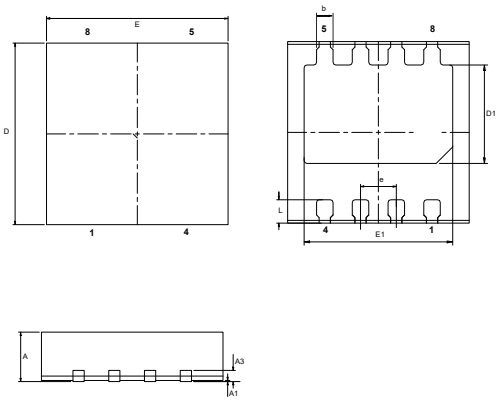
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 60°C/W Junction to Ambient(Note 2)
- Thermal Resistance: 1.6°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	60	A
	T_C=100°C		42	
Pulsed Drain Current （Note3）		I_{DM}	240	A
Total Power Dissipation(Note4)		P_D	93	W
Single Pulse Avalanche Energy (Note 5)		E_{AS}	156	mJ

Note:

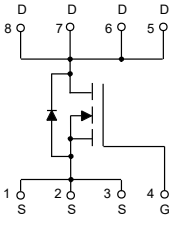
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
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°C, V_{DD}=50V, V_{GS}=10V, R_G=25Ω, L=0.5mH.

DFN3333-8(SWF)



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	0.031	0.70	0.80	
A1	0.000	0.002	0.00	0.05	
A3	0.008		0.20		TYP.
b	0.010	0.014	0.25	0.35	
D	0.130		3.30		TYP.
E	0.130		3.30		TYP.
e	0.026		0.65		TYP.
D1	0.066	0.074	1.69	1.89	
E1	0.102	0.110	2.60	2.80	
L	0.013	0.021	0.325	0.525	

Internal Structure and Marking Code



pin1

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

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}=32V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=40A		3	3.9	mΩ
Gate Resistance	R_g	f=1 MHz, Open drain		2		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				60	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=20A			1.2	V
Reverse Recovery Time	t_{rr}	I_F=40A di/dt=100A/μs		46		ns
Reverse Recovery Charge	Q_{rr}			40		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V,f=1MHz		2144		pF
Output Capacitance	C_{oss}			1340		
Reverse Transfer Capacitance	C_{rss}			165		
Total Gate Charge	Q_g	V_{DD}=20V,I_D=40A V_{GS}=10V		38		nC
Gate-Source Charge	Q_{gs}			10		
Gate-Drain Charge	Q_{gd}			12		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=20V,V_{GS}=4.5V, I_D=40A R_G=1Ω		14		ns
Turn-On Rise Time	t_r			13		
Turn-Off Delay Time	$t_{d(off)}$			24		
Turn-Off Fall Time	t_f			11		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

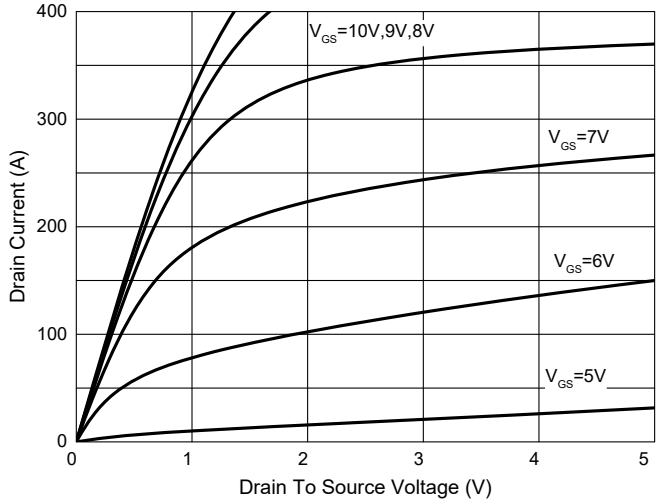


Fig. 2 - Transfer Characteristics

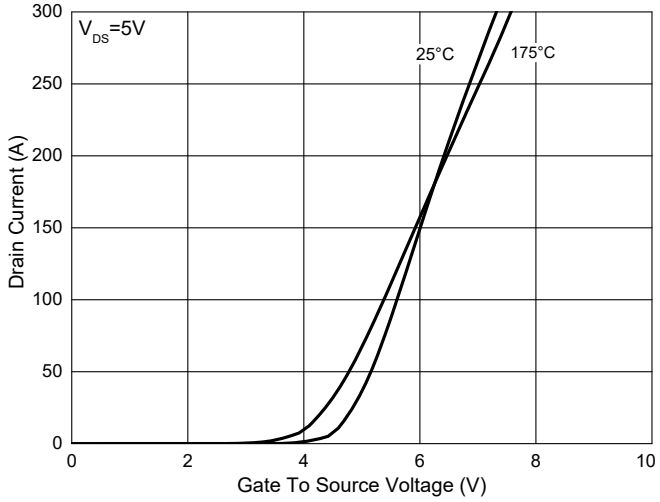


Fig. 3 - $R_{DS(ON)}$—V_{GS}

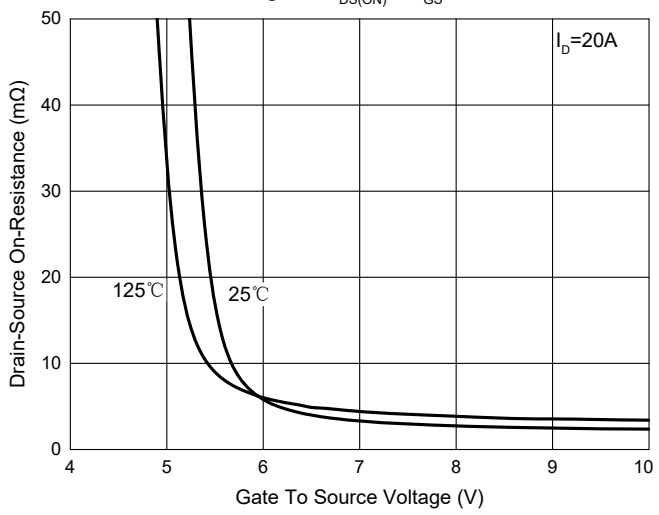


Fig. 4 - $R_{DS(ON)}$—I_D

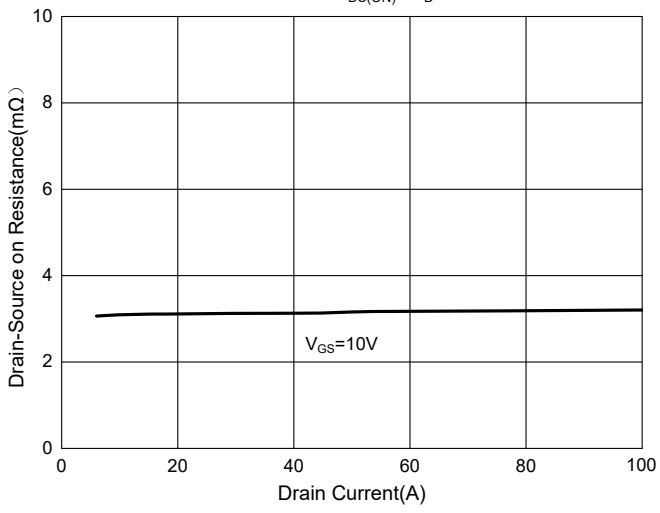


Fig. 5 - Capacitance Characteristics

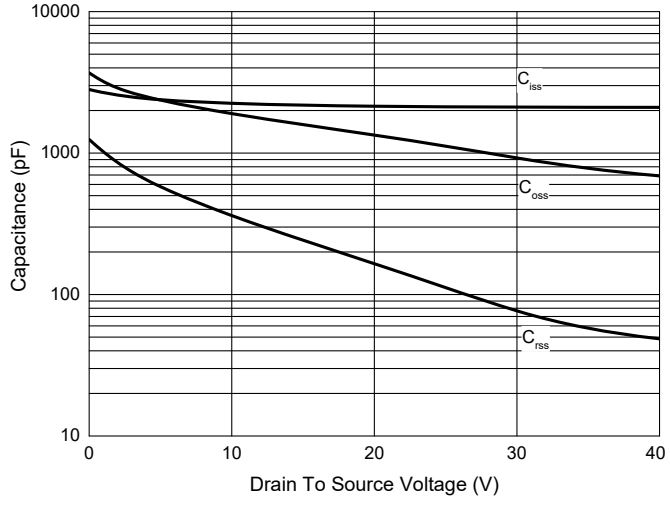
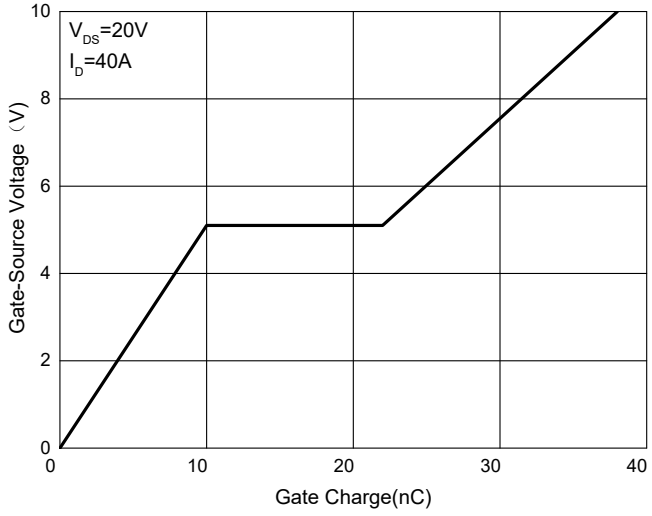


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Nomalized Threshold Voltage

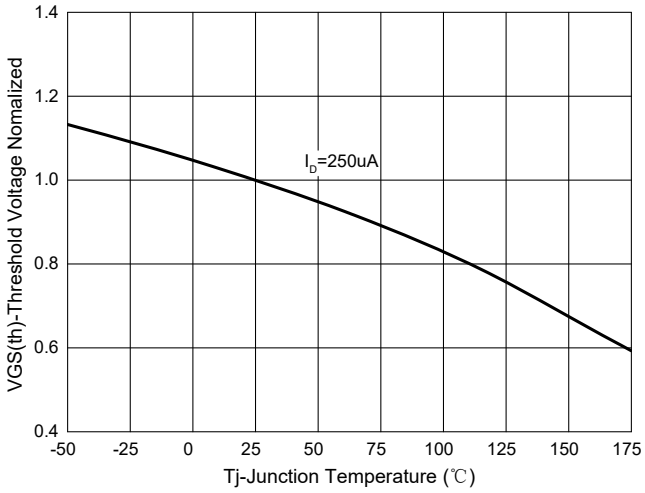


Fig.8-Normalized On Resistance Characteristics

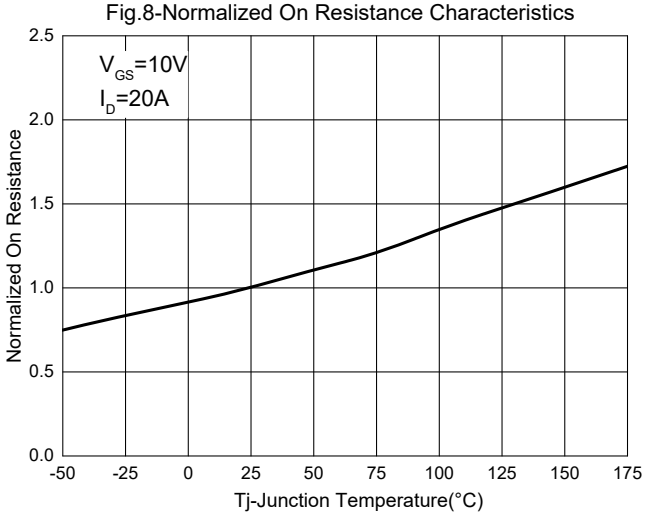


Fig.9 - I_S—V_{SD}

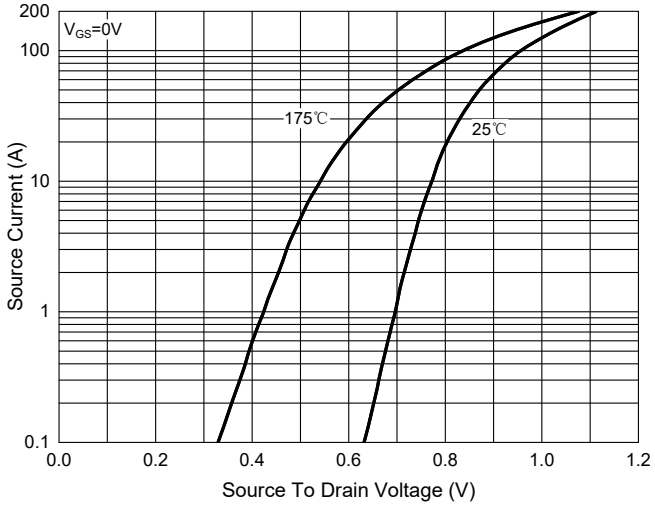


Fig. 10 - Drain Current

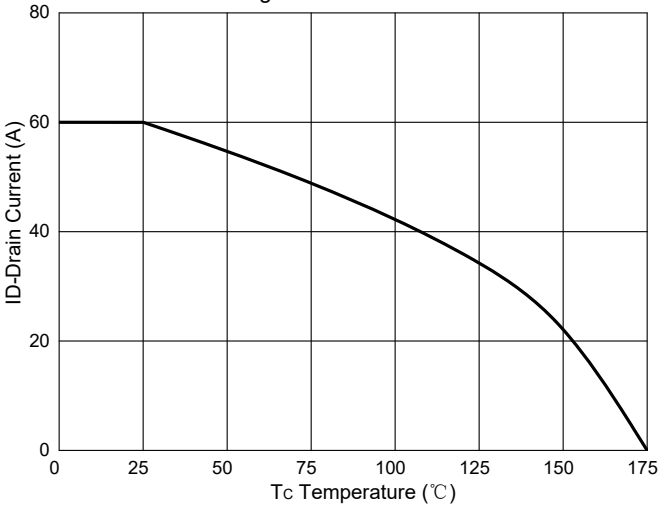
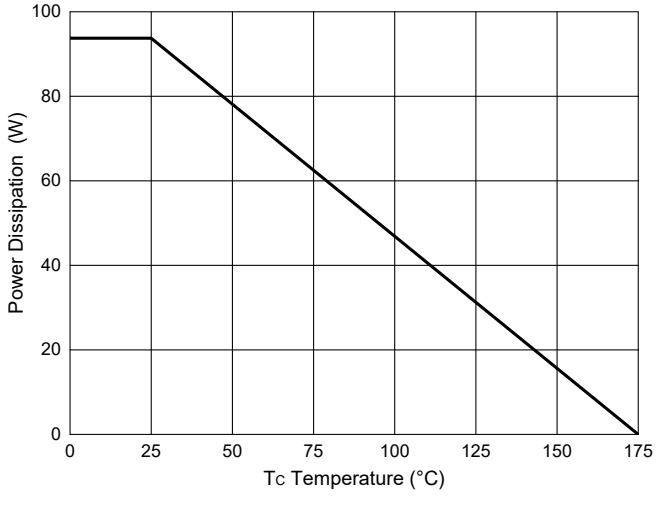


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

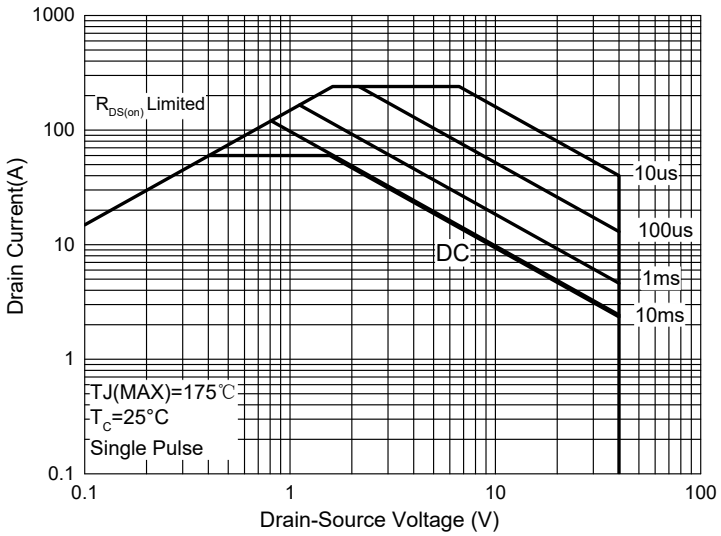
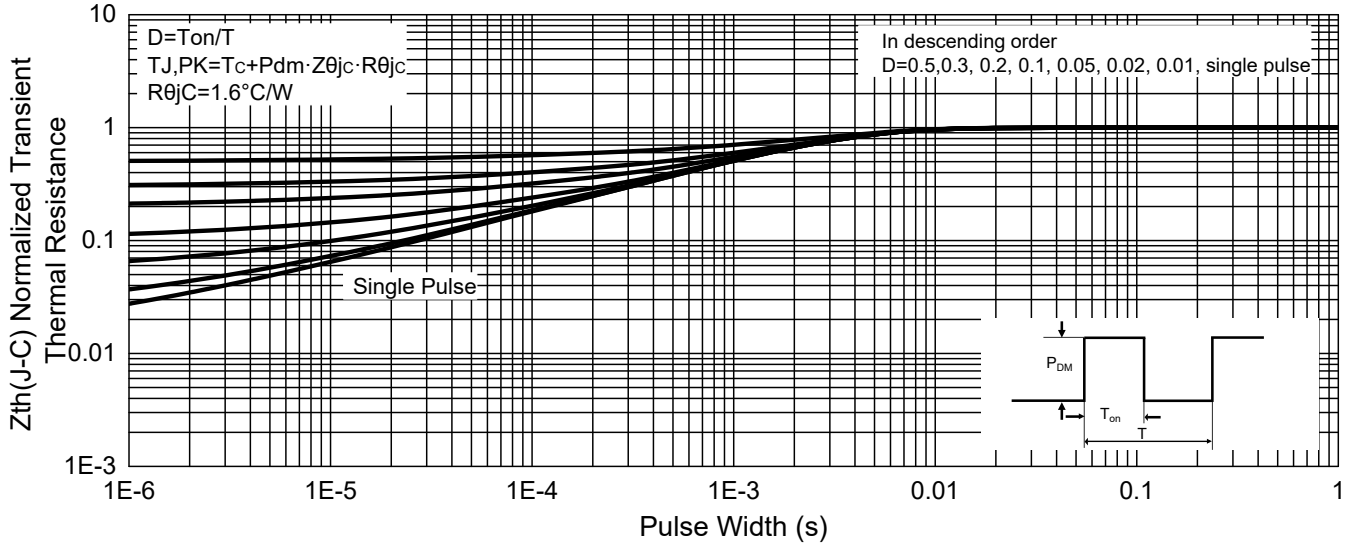


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

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