Features

- AEC-Q101 Qualified
- Trench MV MOSFET Technology
- ESD HBM Class 2
- 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)

N-CHANNEL MOSFET

Maximum Ratings

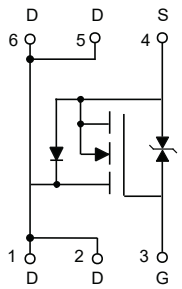
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 85°C/W Junction to Ambient(Note 2)
- Thermal Resistance: 10°C/W Junction to Case

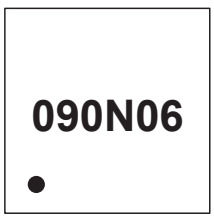
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	8.1	A
	T_C=100°C		5.1	
Pulsed Drain Current(Note 3)		I_{DM}	32.4	A
Total Power Dissipation(Note 4)		P_D	12.5	W

Note:

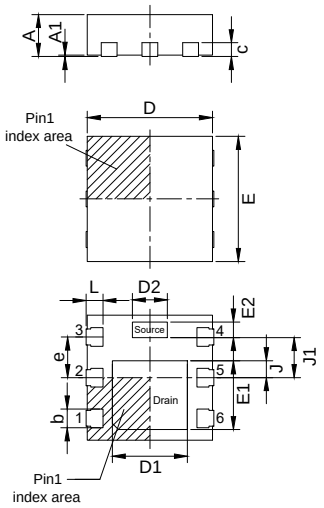
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A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

Internal Structure and Marking Code





DFN2020-6(SWF)



DIM	INCH		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.019	0.034	0.50	0.85	
A1	0.000	0.004	0.00	0.10	
c	0.008		0.20		TYP
D	0.074	0.083	1.90	2.10	
E	0.074	0.083	1.90	2.10	
D1	0.043	0.052	1.10	1.30	
E1	0.039	0.048	1.00	1.20	
D2	0.018	0.026	0.46	0.66	
E2	0.005	0.014	0.15	0.35	
J	0.011		0.27		TYP
J1	0.025		0.64		TYP
b	0.007	0.016	0.20	0.40	
e	0.026		0.65		TYP
L	0.005	0.014	0.15	0.35	

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	60			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.1	1.6	2.1	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=2A		75	90	mΩ
		V_{GS}=4.5V, I_D=1A		85	115	
Gate Resistance	R_g	f=1 MHz, Open Drain		6.3		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				8.1	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=2A			1.2	V
Reverse Recovery Time	t_{rr}	IF=2A, dI_F/dt=100A/μs		13		ns
Reverse Recovery Charge	Q_{rr}			8		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHz		315		pF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{rss}			16		
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V,I_D=2A		6.4		nC
Gate-Source Charge	Q_{gs}			0.97		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_D=2A,R_G=3Ω		4.7		ns
Turn-On Rise Time	t_r			2.6		
Turn-Off Delay Time	$t_{d(off)}$			14.2		
Turn-Off Fall Time	t_f			2.7		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

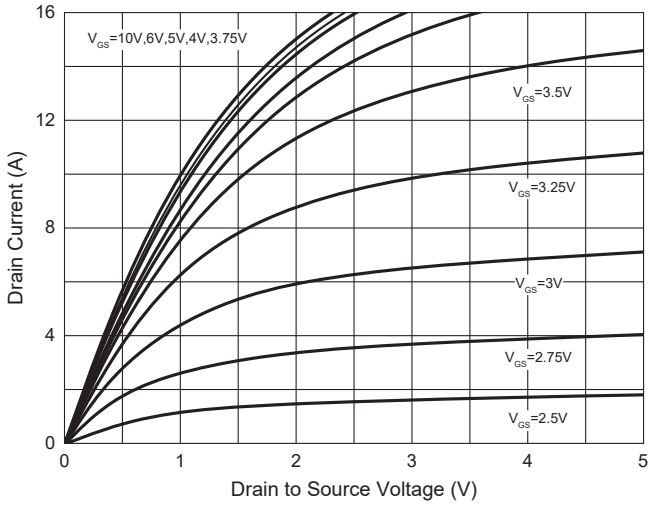


Fig. 2 - Transfer Characteristics

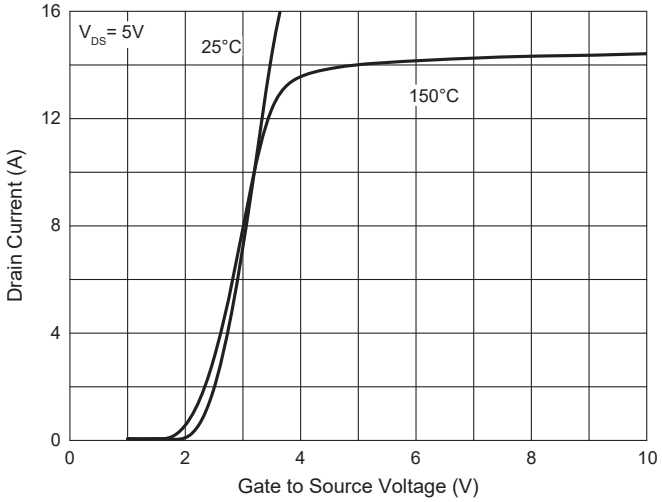


Fig. 3 - $R_{DS(ON)}$-V_{GS}

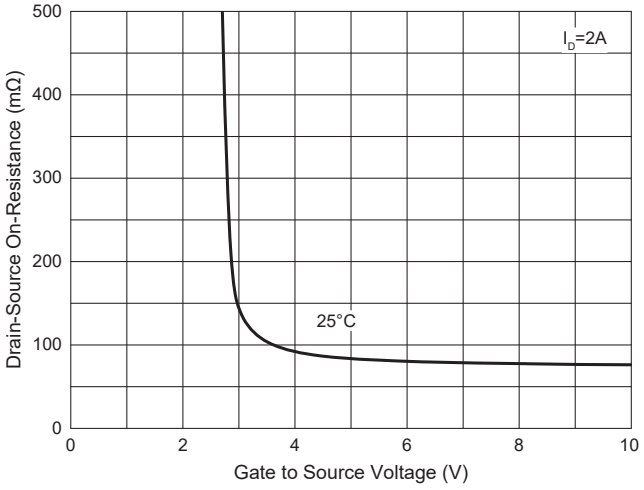


Fig. 4 - $R_{DS(ON)}$-I_D

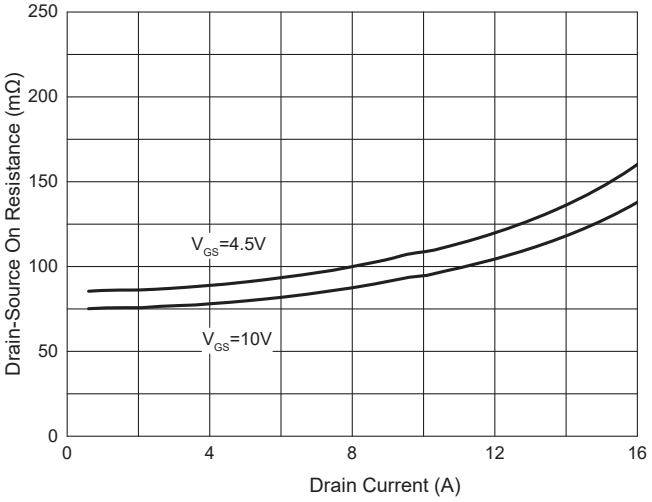


Fig. 5 - Capacitance Characteristics

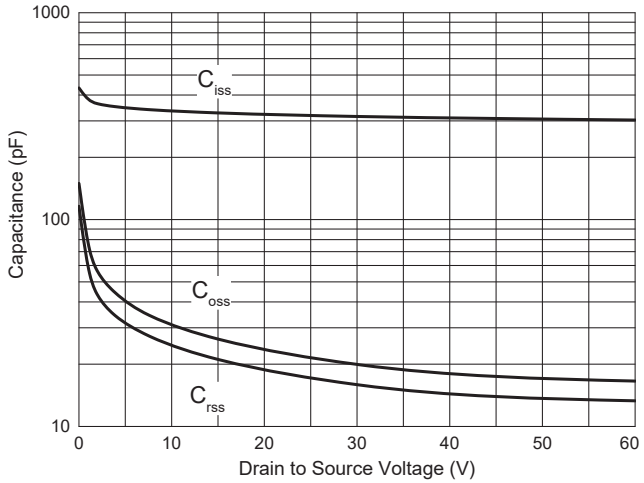
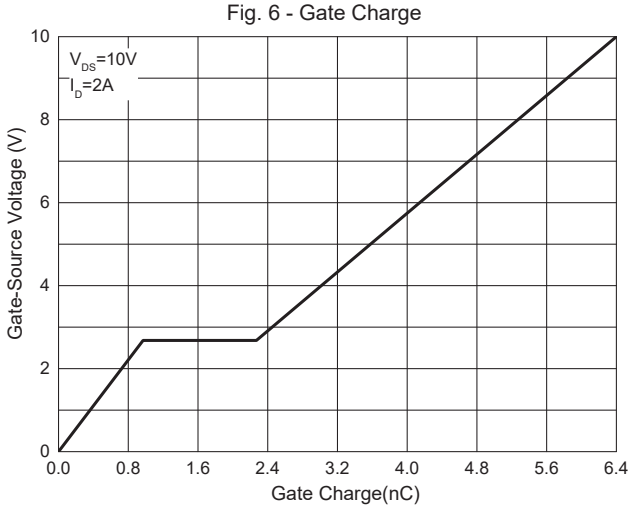


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

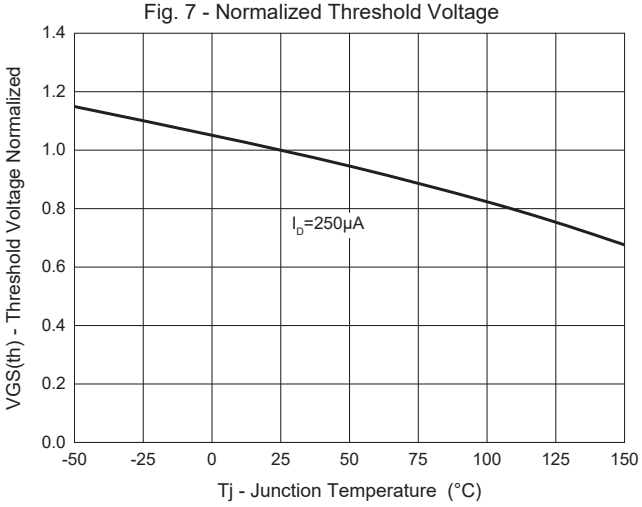


Fig. 8 - Normalized On Resistance Characteristics

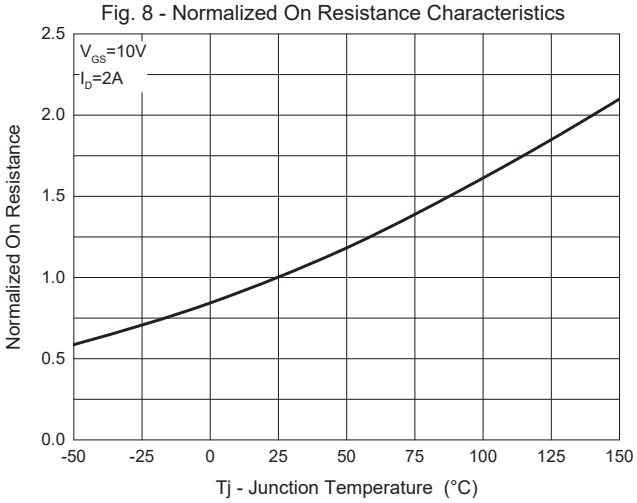


Fig. 9 - I_S-V_{SD}

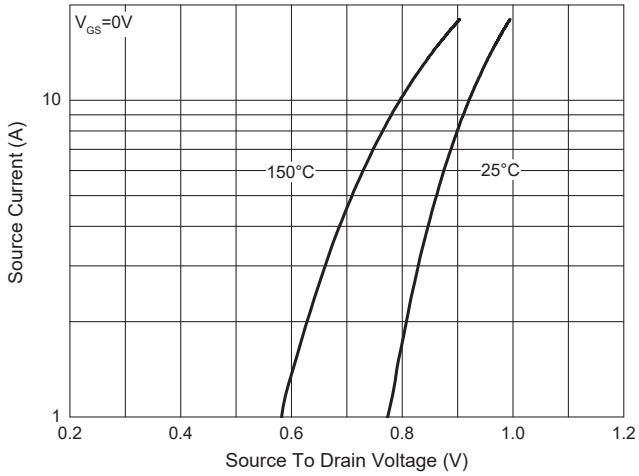


Fig. 10 - Drain Current

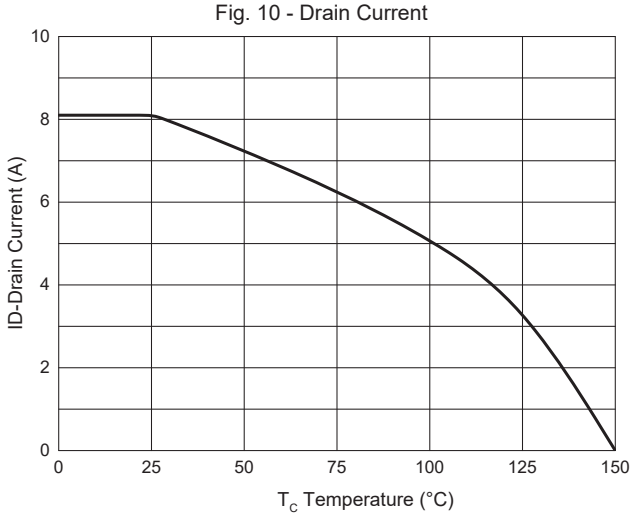
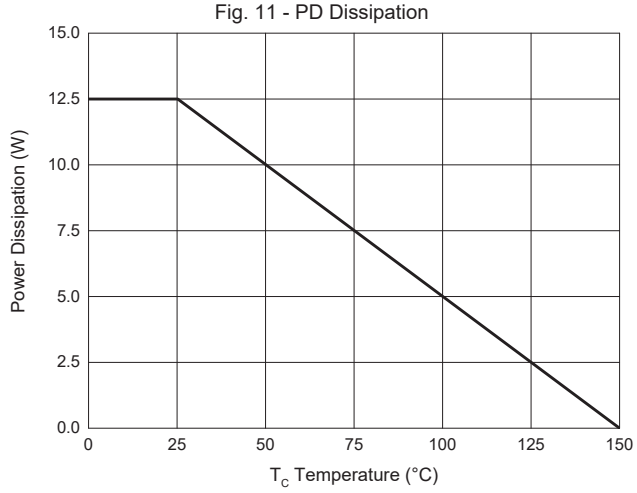


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

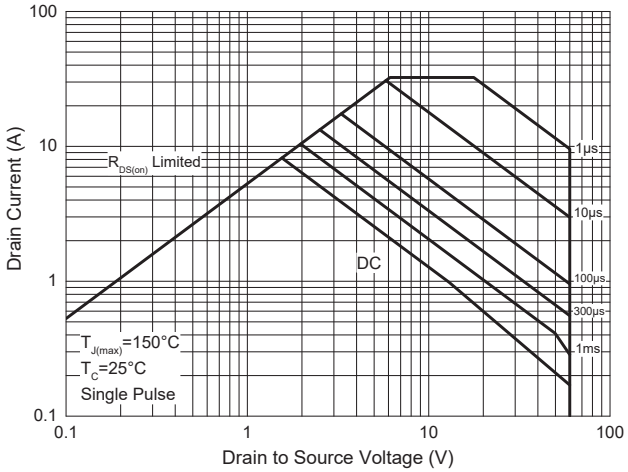
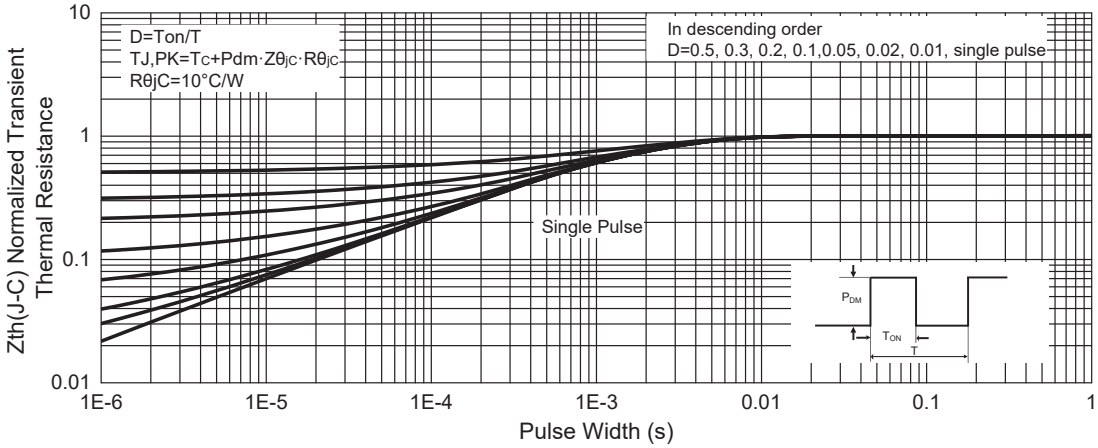


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel