Features

- AEC-Q101 Qualified
- Trench Power MV MOSFET Technology
- High Density Cell Design For Low RDS(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)

N-CHANNEL MOSFET

Maximum Ratings

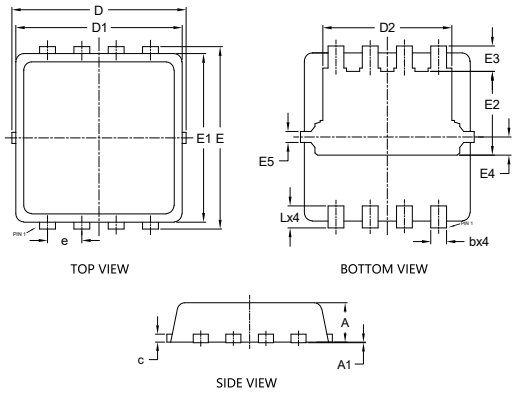
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 60°C/W Junction to Ambient(Note2)
- Thermal Resistance: 3.9°C/W Junction to Case

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	20	A
	T_C=100°C		13	
Pulsed Drain Current(Note3)		I_{DM}	80	A
Total Power Dissipation(Note4)		P_D	32	W
Single Pulsed Avalanche Energy(Note5)		E_{AS}	30	mJ

Note:

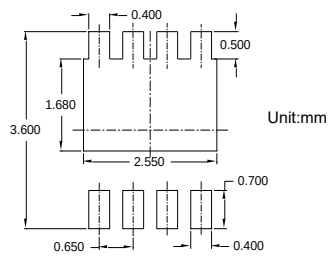
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =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}=60V,V_{GS}=10V,R_G=25Ω,L=0.5mH.

PDFN3333

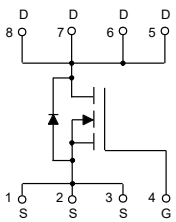


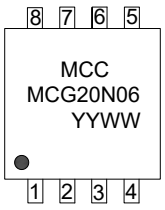
DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	0.033	0.70	0.85	
A1	0.000	0.002	0.00	0.05	
b	0.008	0.016	0.20	0.40	
c	0.004	0.010	0.10	0.25	
D	0.124	0.136	3.15	3.45	
D1	0.118	0.130	3.00	3.30	
D2	0.089	0.104	2.25	2.65	
E	0.124	0.136	3.15	3.45	
E1	0.114	0.126	2.90	3.20	
E2	0.052	0.068	1.32	1.72	
E3	0.011	0.026	0.28	0.65	
E4	0.013		0.330		TYP
E5	0.008		0.200		TYP
e	0.026		0.650		BSC
L	0.012	0.020	0.300	0.500	

Suggested Solder Pad Layout



Internal Structure and Marking Code





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	60			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
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	1.0	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A		22	28	mΩ
		V_{GS}=4.5V, I_D=10A		25	35	
Gate Resistance	R_g	f=1MHz, Open Drain		2.0		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				20	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=15A			1.2	V
Reverse Recovery Time	t_{rr}	I_F=18A, dI_F/dt=100A/μs		23.5		ns
Reverse Recovery Charge	Q_{rr}			17.5		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		1200		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V,I_D=18A		23		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			6		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_{DS}=2A,R_G=3Ω		6		ns
Turn-On Rise Time	t_r			3		
Turn-Off Delay Time	$t_{d(off)}$			24		
Turn-Off Fall Time	t_f			4		

Curve Characteristics

Fig.1 - Typical Output Characteristics

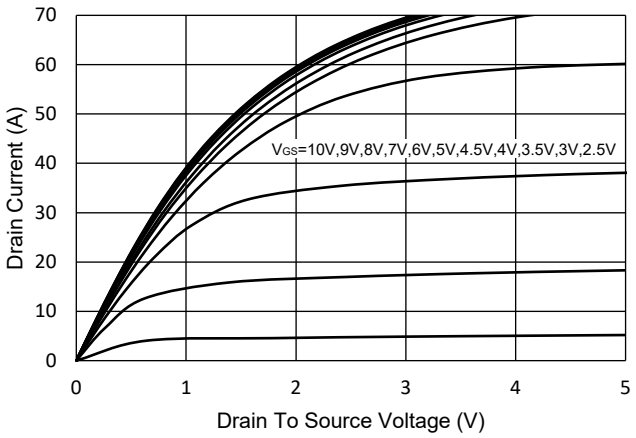


Fig.2 - Transfer Characteristic

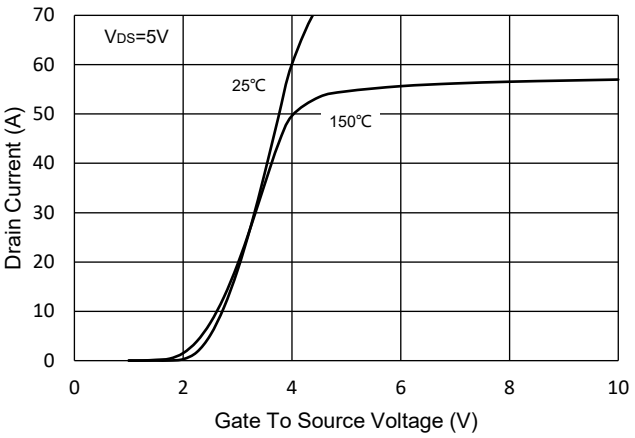


Fig.3 - $R_{DS(ON)}$ - V_{GS}

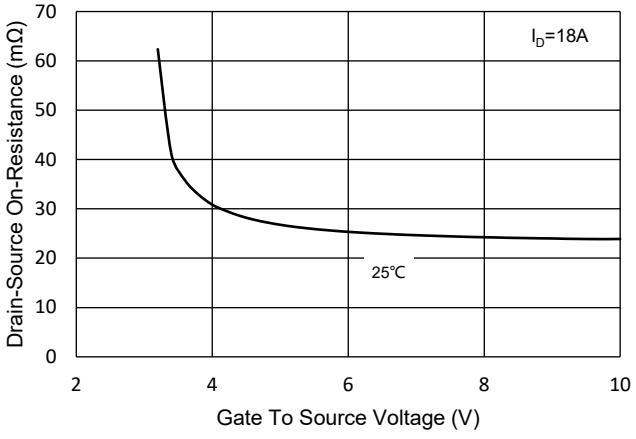


Fig.4 - $R_{DS(ON)}$ - I_D

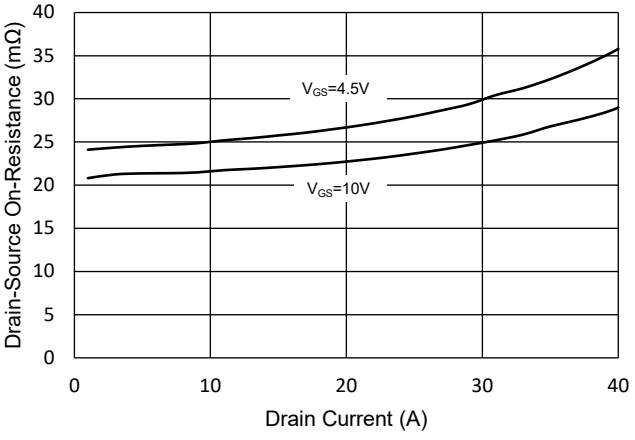


Fig.5 - Capacitance Characteristics

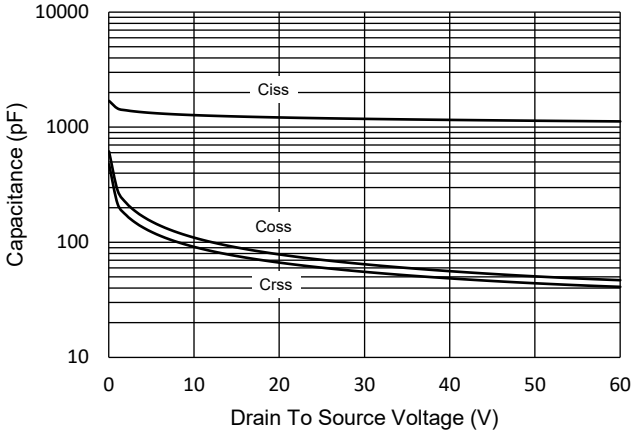
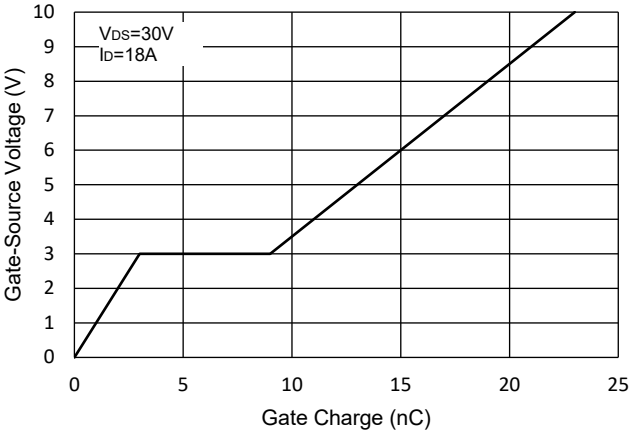


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

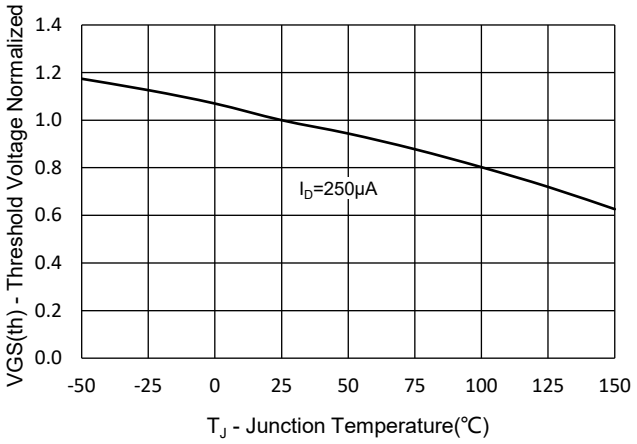


Fig.8 - Normalized On Resistance Characteristics

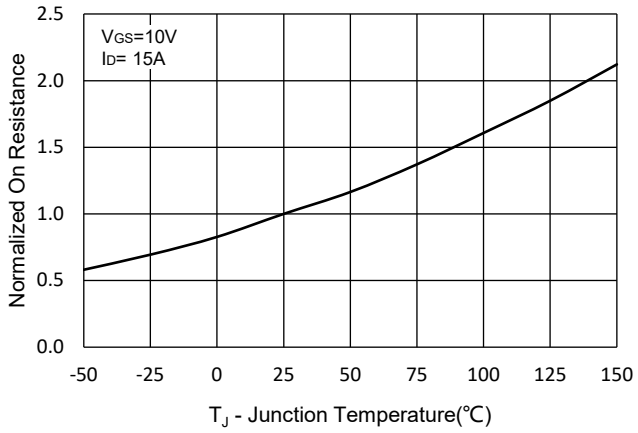


Fig.9 - I_S - V_{SD}

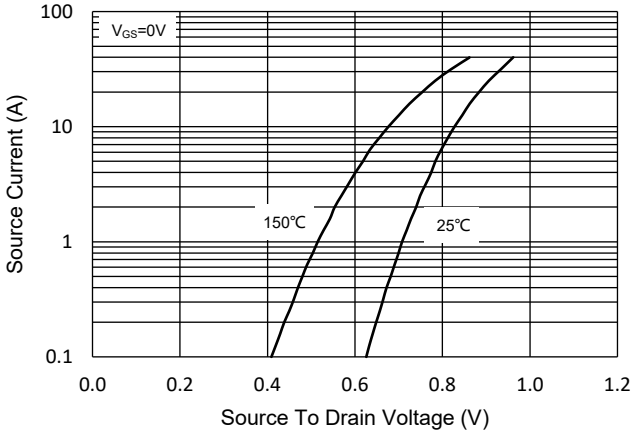


Fig.10 - Drain Current

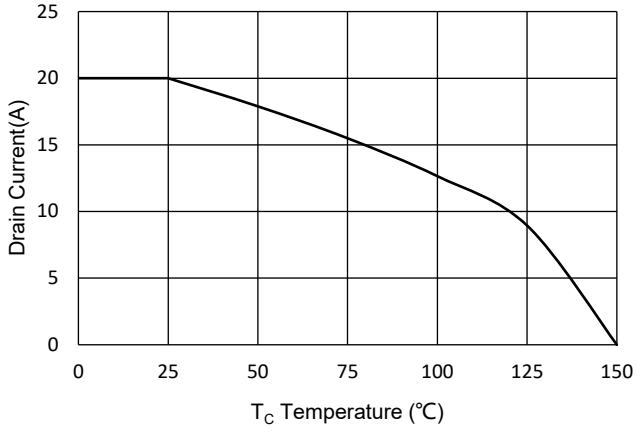
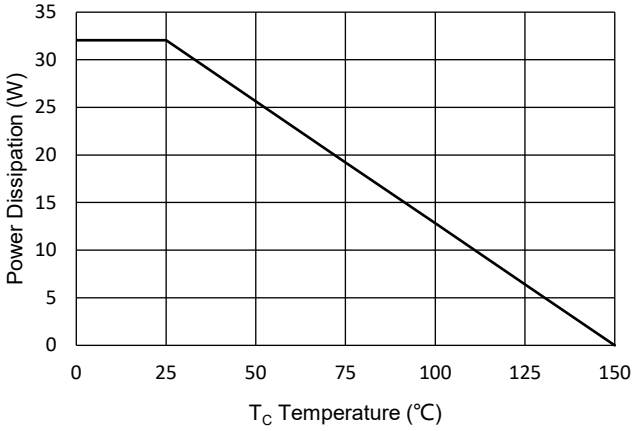


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

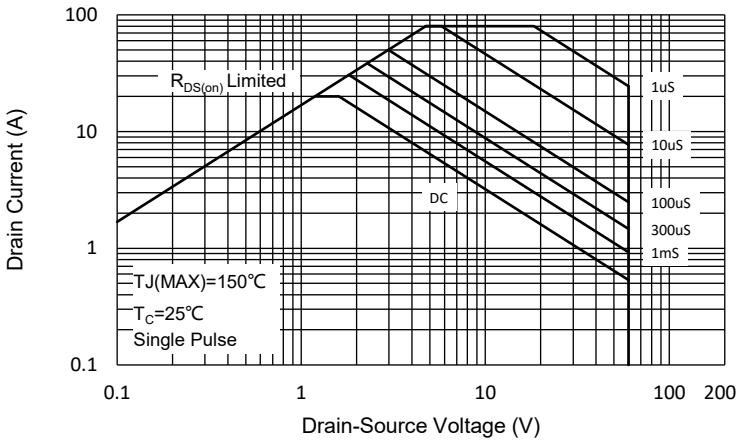
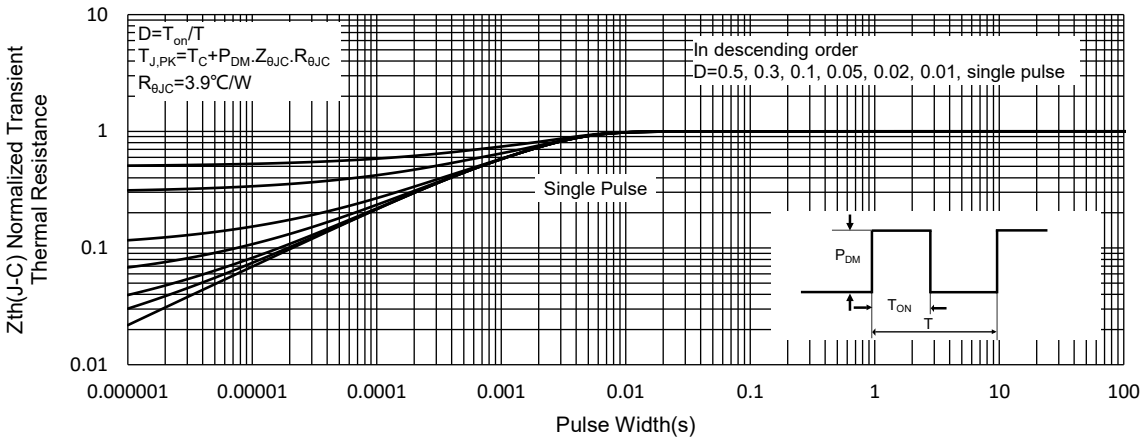


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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