Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- Halogen Free. “Green” Device (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

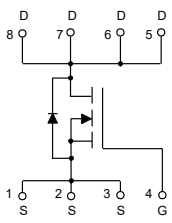
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 2.8°C/W Junction to Case(2)

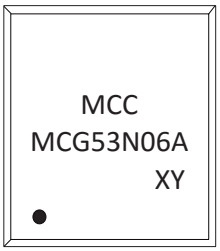
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Volltage	V_{GS}	±20	V
Continuous Drain Current	I_D	53	A
Pulsed Drain Current(3)	I_{DM}	160	A
Total Power Dissipation	P_D	45	W
Single Pulsed Avalanche Energy(4)	E_{AS}	162	mJ

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. Surface Mounted on 1 in^2 pad area, t ≤10 sec.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. V_{DD}=50V, R_G=25Ω, L=1mH, I_{AS}=18A.

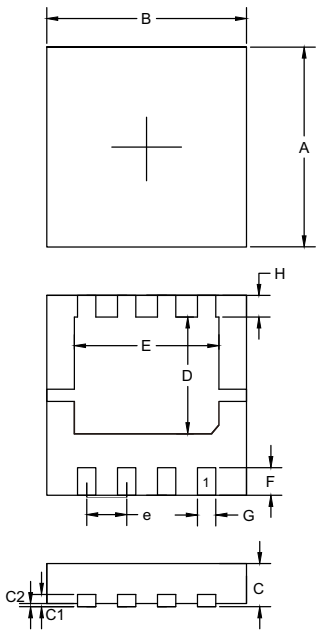
Internal Structure and Marking Code





2 codes in total
X is the year
Y is the month

DFN3333



DIMENSIONS					
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	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	1.2	1.7	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A		5.8	8.2	mΩ
		V_{GS}=4.5V, I_D=10A		7.8	12	mΩ
Gate Resistance	R_g	V_{DS}=0V,V_{GS}=0V,f=1MHZ		1.6		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				53	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=20A			1.3	V
Reverse Recovery Time	t_{rr}	I_F=20A, dI_F/dt=500A/μs		30		ns
Reverse Recovery Charge	Q_{rr}			18		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHz		1850		pF
Output Capacitance	C_{oss}			440		
Reverse Transfer Capacitance	C_{rss}			20		
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V,I_D=20A		31		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			5		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, VDS=30V, R_L=2.5Ω, R_{GEN}=3Ω		10		ns
Turn-On Rise Time	t_r			34		
Turn-Off Delay Time	$t_{d(off)}$			26.2		
Turn-Off Fall Time	t_f			45		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

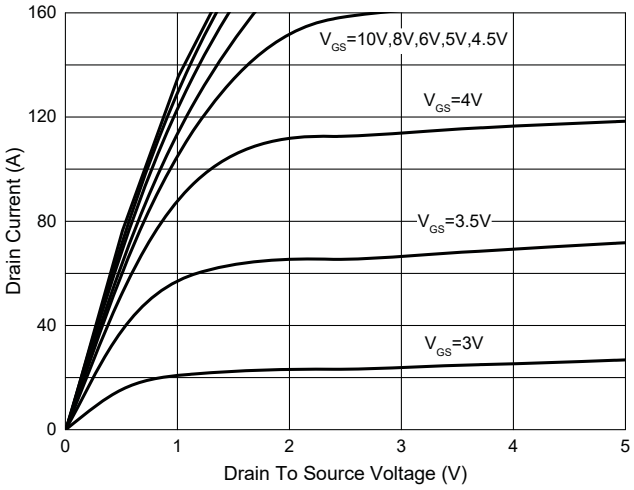


Fig. 2 - Transfer Characteristics

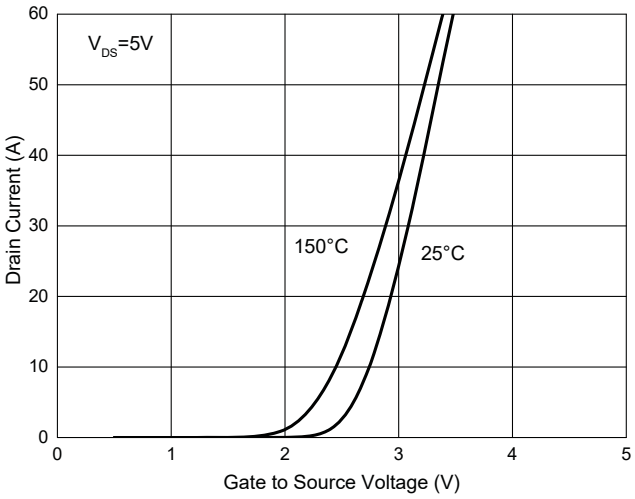


Fig. 3 - $R_{DS(ON)}$—I_D

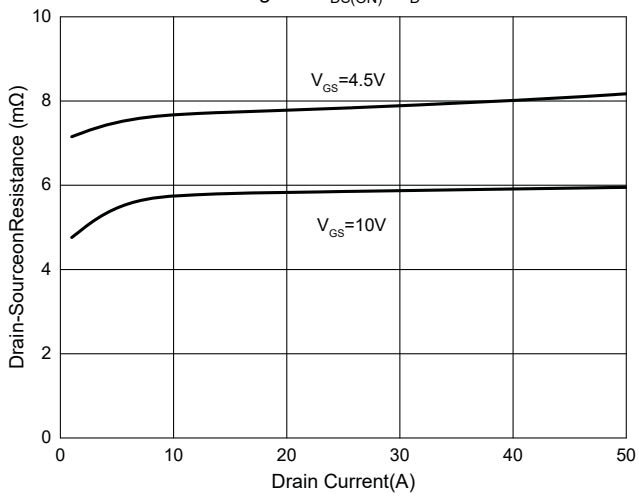


Fig. 4 - Normalized On Resistance Characteristics

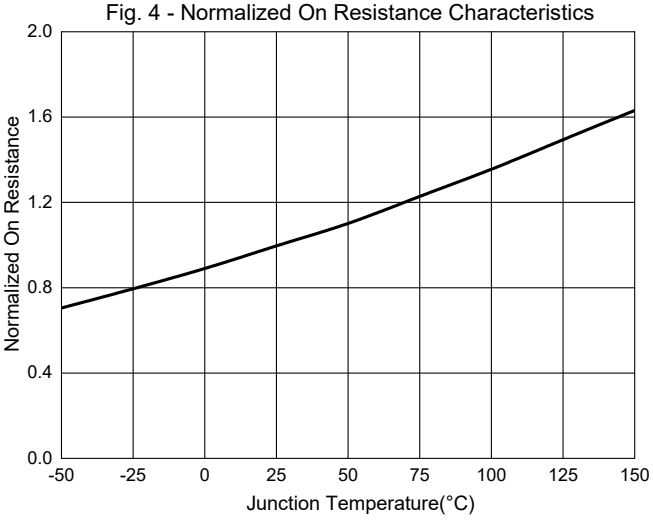


Fig. 5 - $R_{DS(ON)}$—V_{GS}

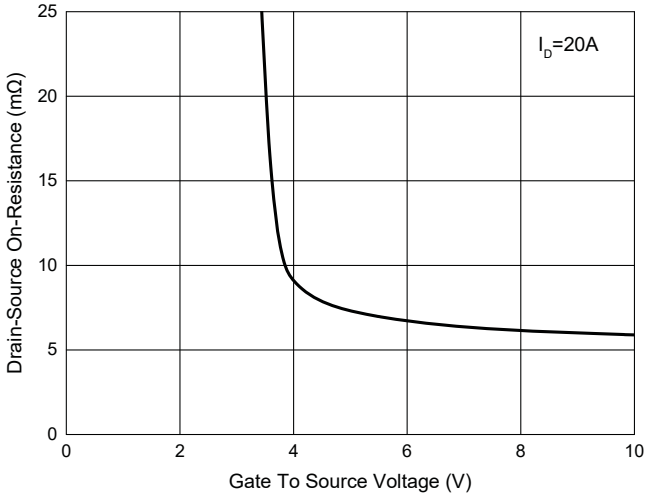
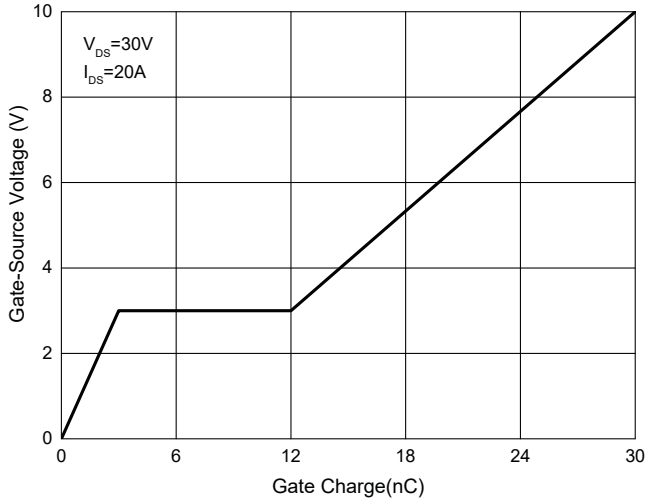


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized On $V_{GS(th)}$ Characteristics

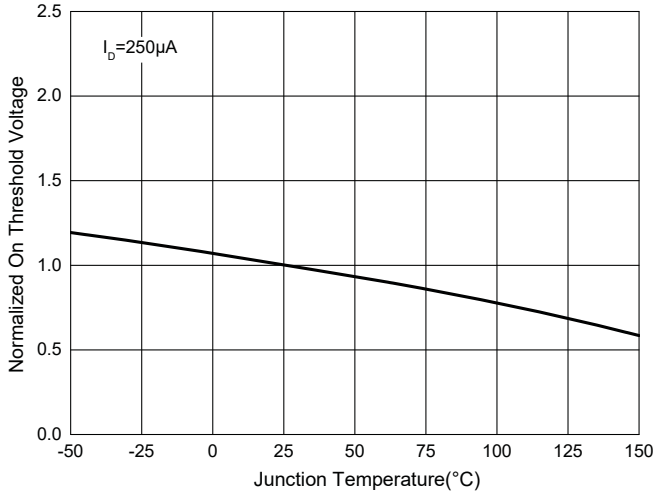


Fig. 8 - Current Dissipation Characteristics

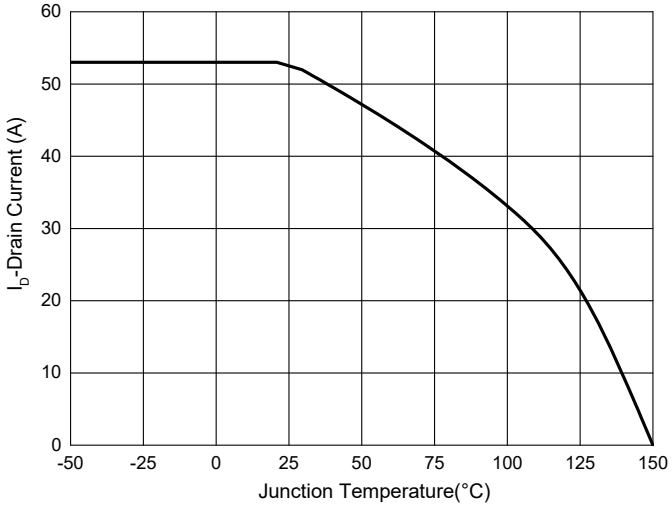


Fig. 9 - Capacitance Characteristics

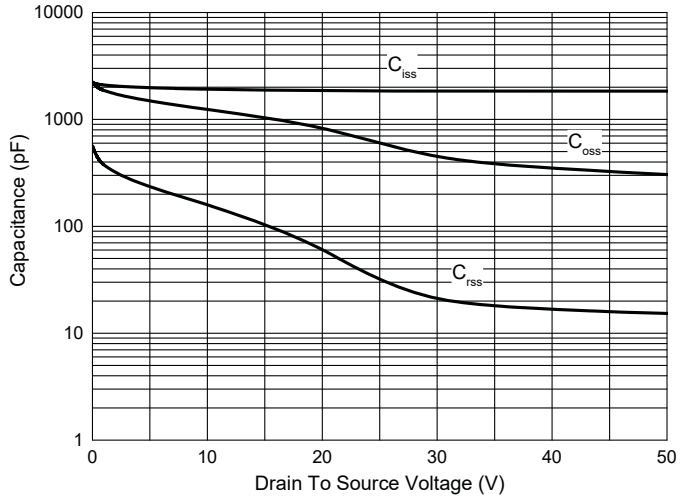


Fig. 10 - Safe Operation Area

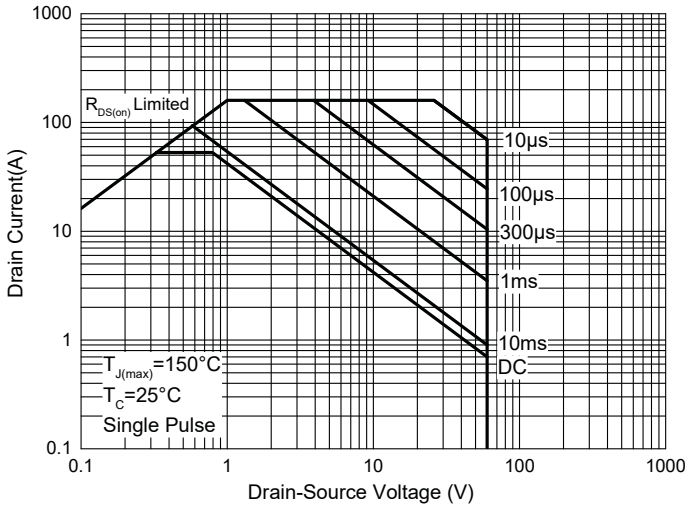
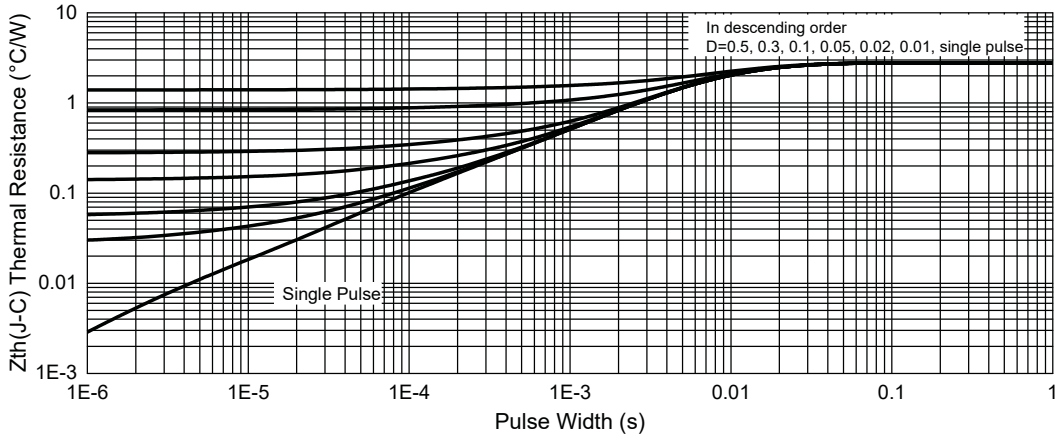


Fig. 11 - Maximum Transient Thermal Impedance



Ordering Information

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