

**Features**

- Trench Power LV MOSFET Technology
- Low Thermal Resistance
- AEC-Q101 Qualified
- 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**

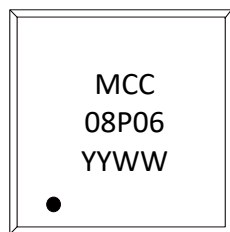
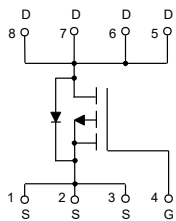
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 6°C/W Junction to Case<sup>(2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	-8	A
Pulsed Drain Current <sup>(3)</sup>	$I_{DM}$	-60	A
Total Power Dissipation	$P_D$	20.8	W
Single Pulsed Avalanche Energy <sup>(4)</sup>	$E_{AS}$	242	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<sup>2</sup> pad area, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
4.  $V_{DD} = -50V$ , L = 1mH.

**Internal Structure and Marking Code**

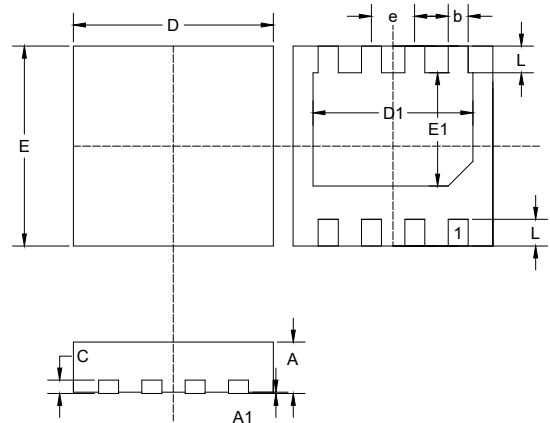


pin1

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

**P-CHANNEL  
MOSFET**

**DFN3333-8**



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	
C	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	0.100	0.110	2.55	2.80	
E1	0.065	0.074	1.64	1.89	
L	0.013	0.021	0.325	0.525	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-48V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-6A$		23.6	28.4	m $\Omega$
		$V_{GS}=-4.5V, I_D=-3A$		30.2	39.3	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-8	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-3A$			-1.3	V
Reverse Recovery Time	$t_{rr}$	$I_F=-3A, dI_F/dt=100A/\mu s$		29		ns
Reverse Recovery Charge	$Q_{rr}$			38		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$		4304		pF
Output Capacitance	$C_{oss}$			168		
Reverse Transfer Capacitance	$C_{rss}$			104		
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-3A$		61		nC
Gate-Source Charge	$Q_{gs}$			17		
Gate-Drain Charge	$Q_{gd}$			7.1		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-30V, V_{GEN}=-10V,$ $R_G=4.5\Omega, R_L=2\Omega,$ $I_{DS}=-3A$		62		ns
Turn-On Rise Time	$t_r$			79		
Turn-Off Delay Time	$t_{d(off)}$			376		
Turn-Off Fall Time	$t_f$			161		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

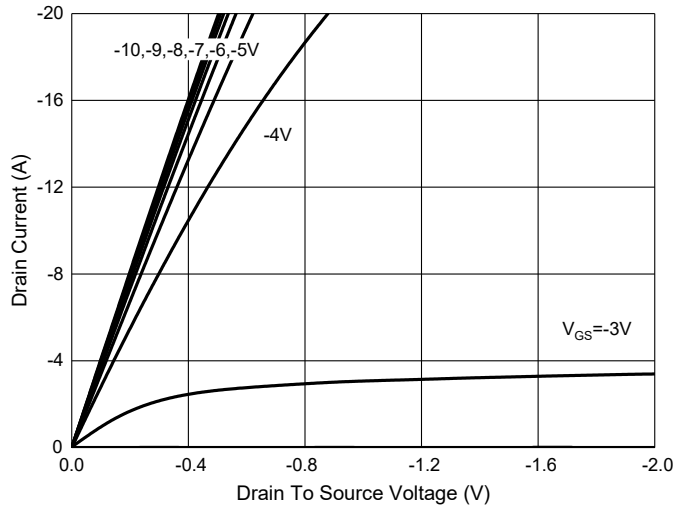


Fig. 2 -  $I_S - V_{SD}$

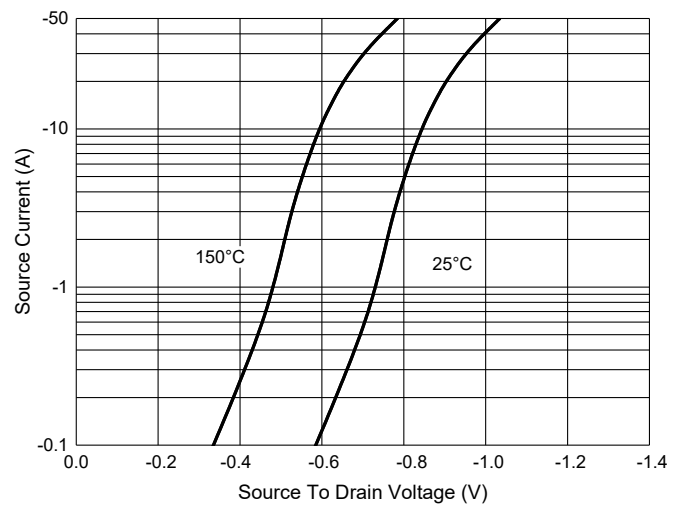


Fig. 3 -  $R_{DS(ON)} - I_D$

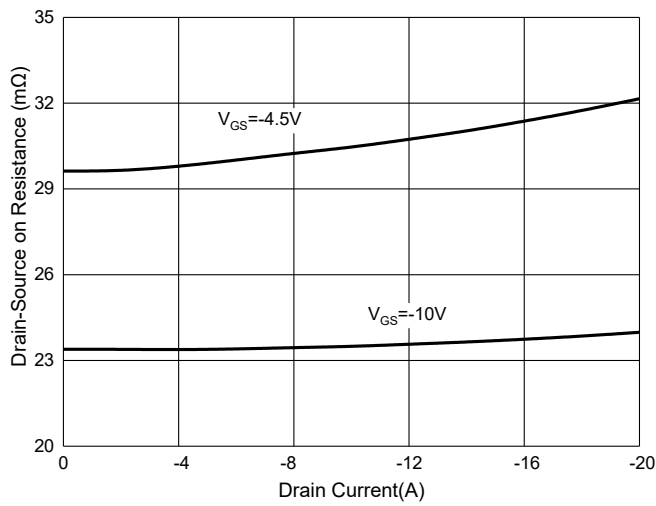


Fig. 4 - Normalized On Resistance Characteristics

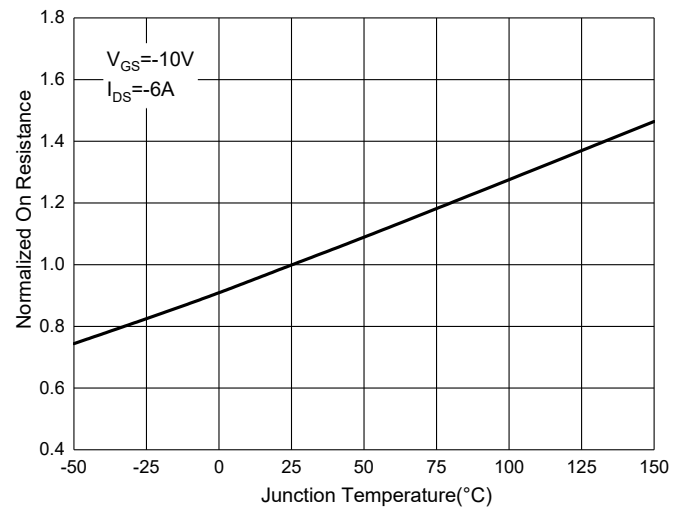


Fig. 5 - Capacitance Characteristics

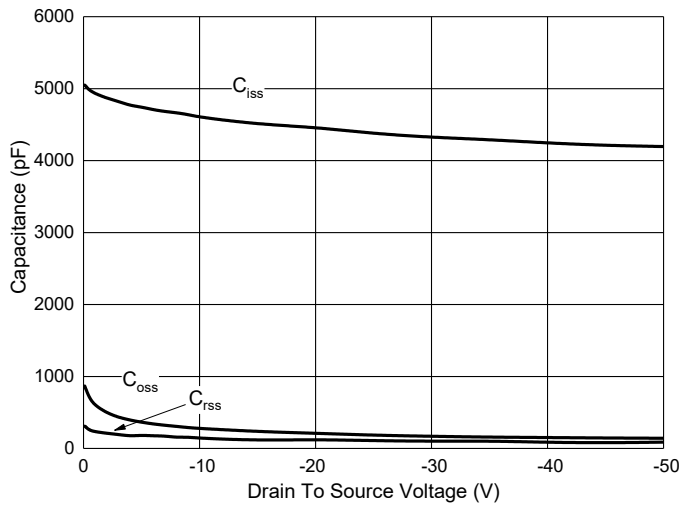
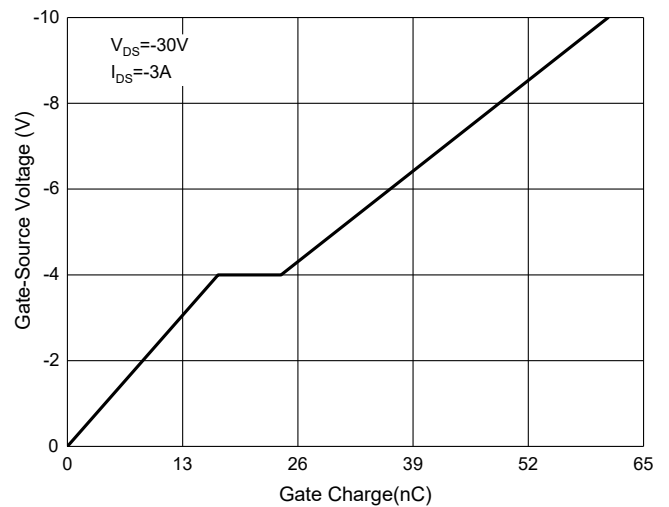


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area

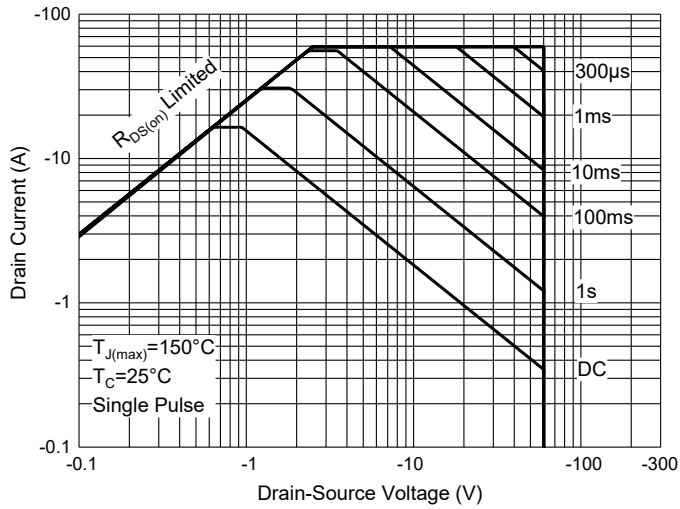
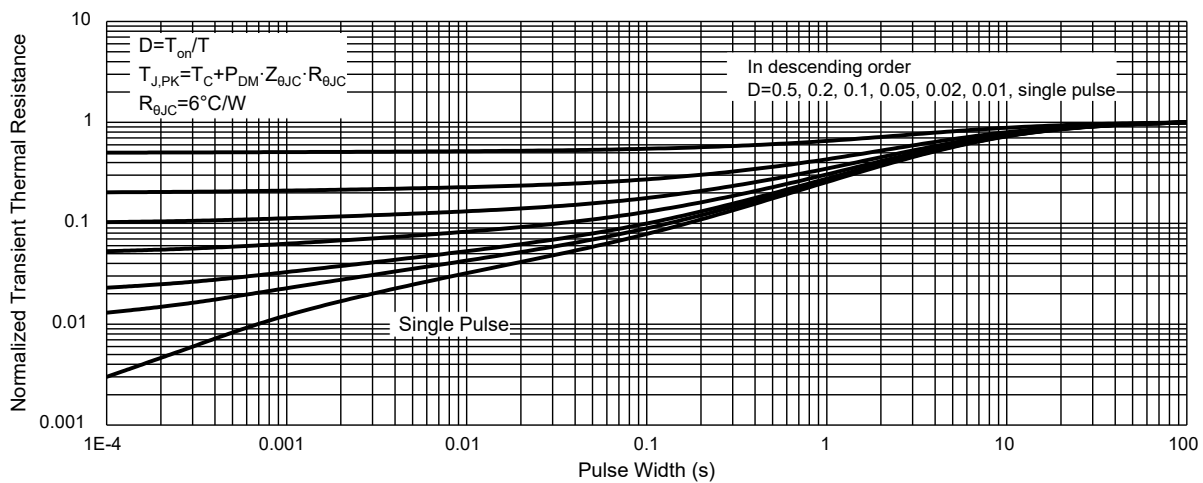


Fig. 8 - Normalized Maximum Transient Thermal Impedance



## Ordering Information

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

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