

## Features

- Split Gate Trench MOSFET Technology
- Low  $R_{DS(on)}$  & FOM
- Low  $C_{rss}$
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- 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 1

## Maximum Ratings

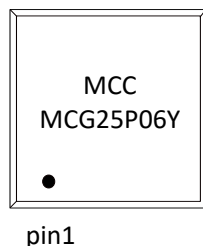
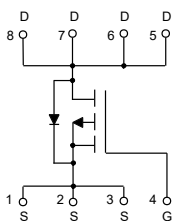
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 20°C/W Junction to Ambient( $t \leq 10s$ )
- Thermal Resistance: 50°C/W Junction to Ambient(Steady-State)
- Thermal Resistance: 1.7°C/W Junction to Case(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-25	A
Pulsed Drain Current <sup>(Note2)</sup>	$I_{DM}$	-75	A
Total Power Dissipation <sup>(Note3)</sup>	$P_D$	73.5	W
Single Pulsed Avalanche Energy <sup>(Note4)</sup>	$E_{AS}$	81	mJ

Note:

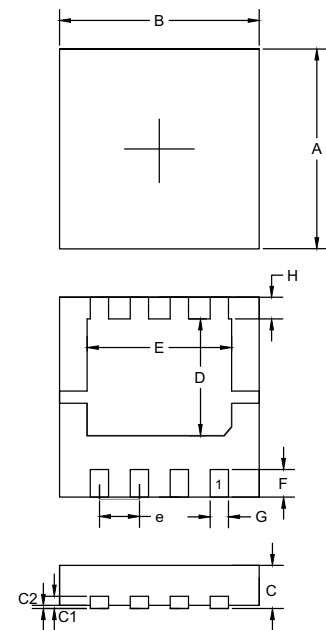
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $P_D$  is based on max. junction temperature, using junction-case thermal resistance.
4.  $V_{DD} = -50V$ ,  $R_G = 25\Omega$ ,  $L = 0.5mH$ ,  $I_{AS} = -18A$ .

## Internal Structure and Marking Code



# P-CHANNEL MOSFET

## DFN3333

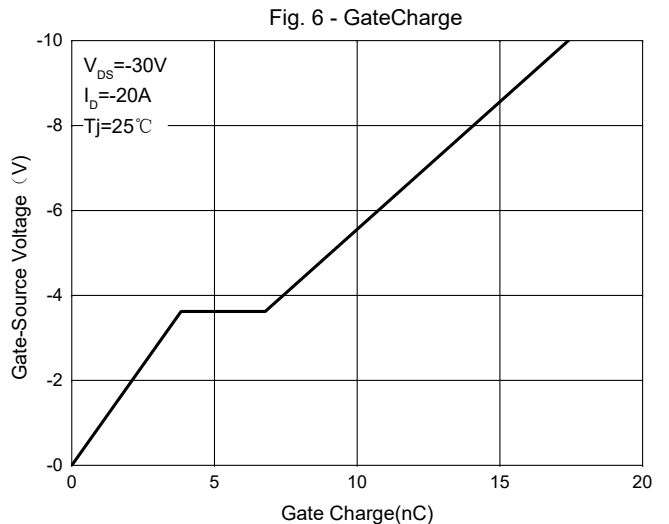
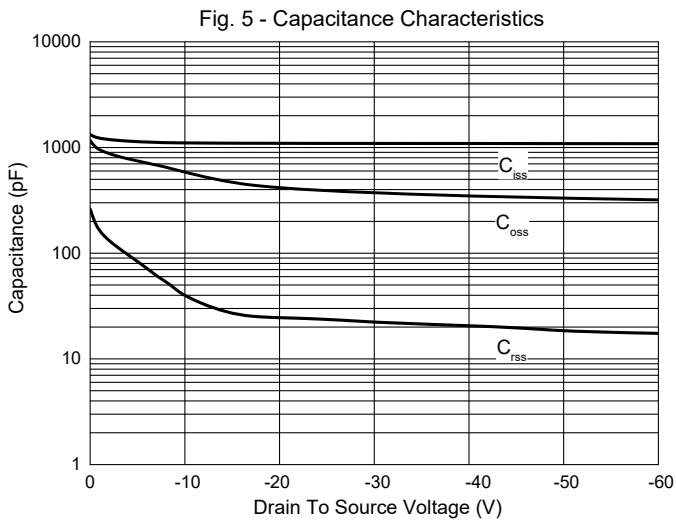
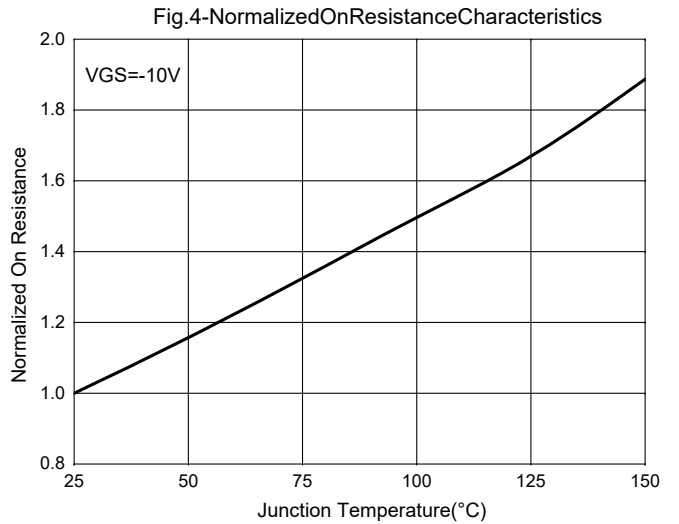
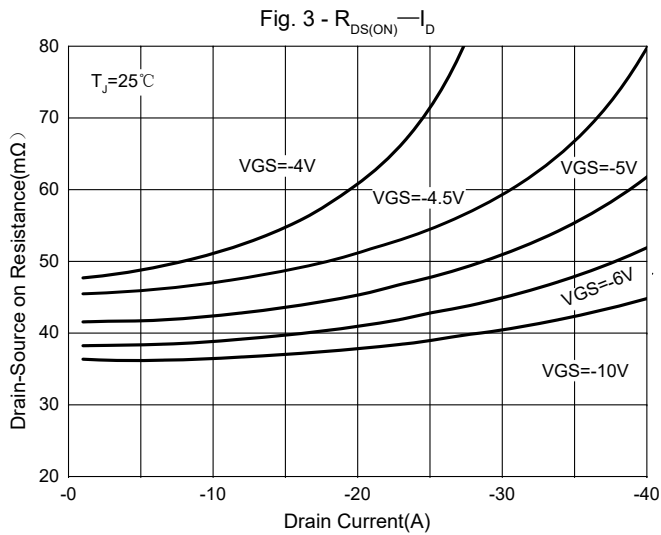
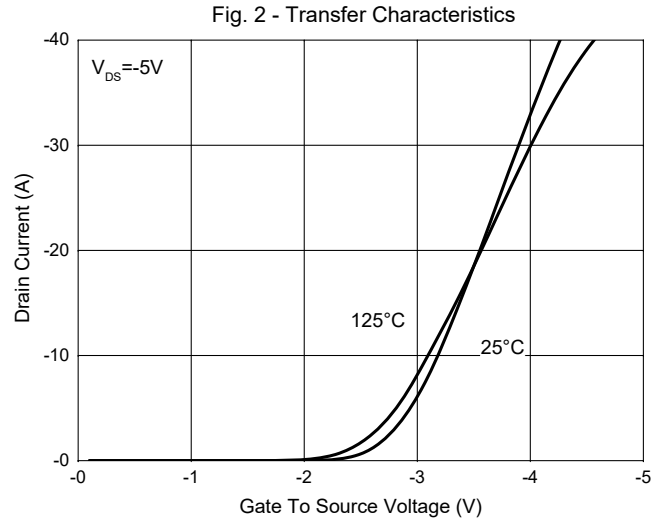
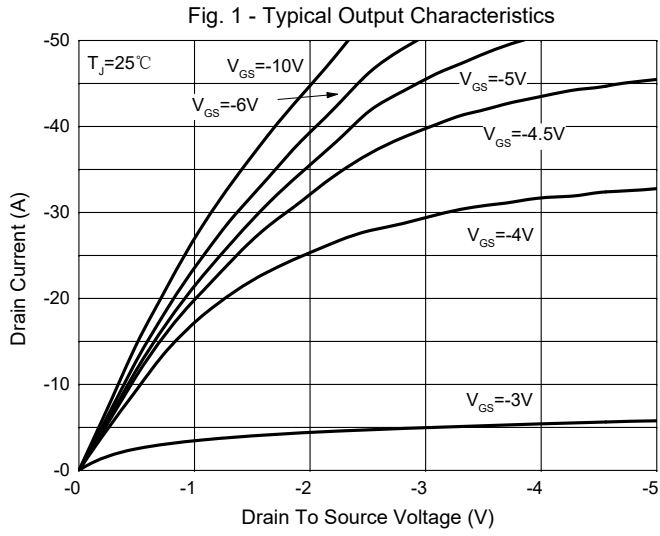


DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.126	0.130	3.20	3.30	
B	0.126	0.130	3.20	3.30	
C	0.030	0.033	0.75	0.85	
C1	0.007	0.009	0.18	0.22	
C2	---	0.002	---	0.05	
D	0.071	0.079	1.80	2.00	
E	0.087	0.098	2.20	2.50	
F	0.016	0.020	0.40	0.50	
G	0.010	0.014	0.25	0.35	
H	0.012	0.016	0.30	0.40	
e	0.024	0.028	0.60	0.70	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<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	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.5	-2.1	-2.7	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		38	50	m $\Omega$
		$V_{GS}=-4.5V, I_D=-10A$		48	65	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-25	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-20A$		-0.95	-1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=-20A, di/dt=100A/\mu s$		28.25		ns
Reverse Recovery Charge	$Q_{rr}$			20.2		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$		1024		pF
Output Capacitance	$C_{oss}$			386		
Reverse Transfer Capacitance	$C_{rss}$			22		
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-20A$		17.4		nC
Gate-Source Charge	$Q_{gs}$			3.83		
Gate-Drain Charge	$Q_{gd}$			2.94		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-30V, V_{GS}=-10V, R_G=6\Omega$		7.9		ns
Turn-On Rise Time	$t_r$			4.63		
Turn-Off Delay Time	$t_{d(off)}$			42.4		
Turn-Off Fall Time	$t_f$			15.7		

Curve Characteristics



## Curve Characteristics

Fig. 7 - Safe Operation Area

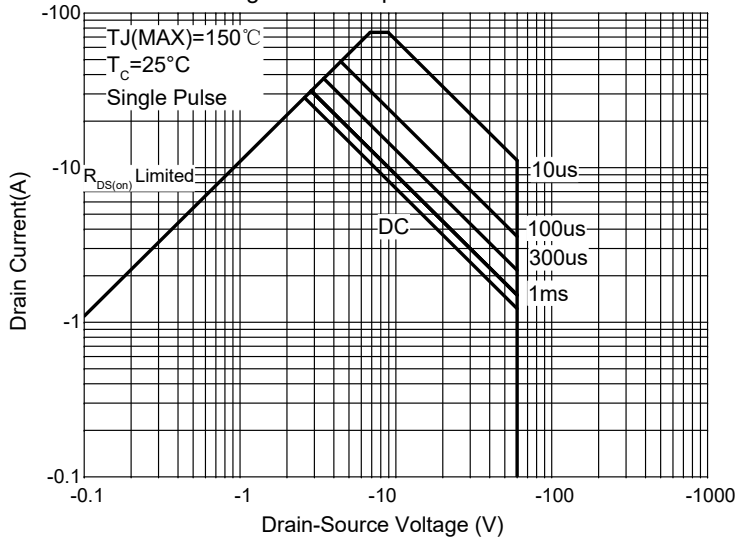
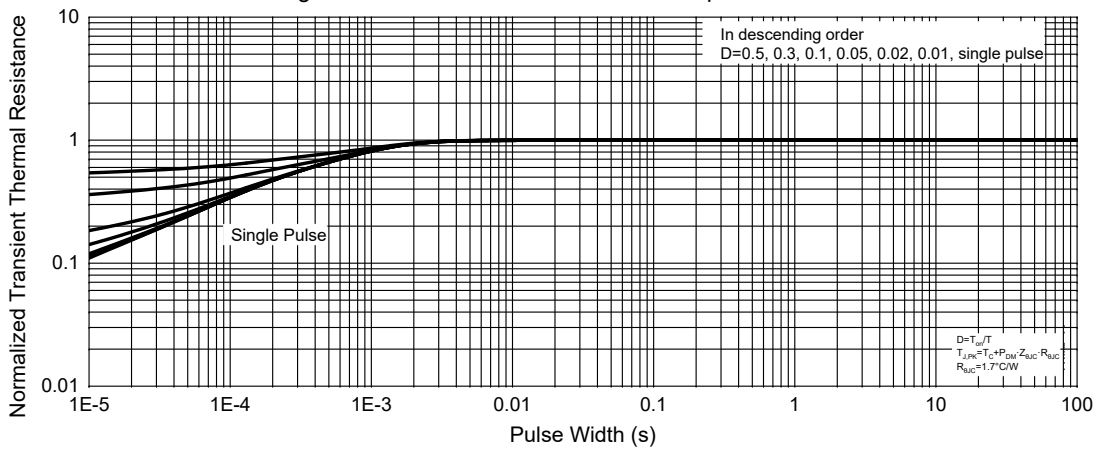


Fig. 8 -Normalized Transient Thermal Impedance



## Ordering Information

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

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