

Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Excellent Package For Heat Dissipation
- 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)

Maximum Ratings

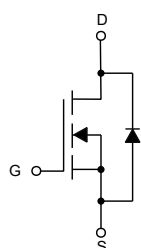
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance:45°C/W Junction to Ambient (Note2)
- Thermal Resistance:0.6°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	220
		$T_C=100^\circ\text{C}$	156
Pulsed Drain Current (Note3)	I_{DM}	880	A
Total Power Dissipation (Note4)	P_D	250	W
Avalanche Energy (Note5)	E_{AS}	900	mJ

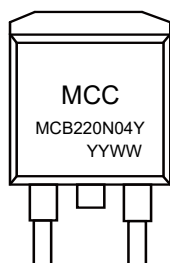
Note:

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 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
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. $T_J=25^\circ\text{C}$, $V_{DD}=40\text{V}$, $V_{GS}=10\text{V}$, $L=0.5\text{mH}$

Internal Structure and Marking Code



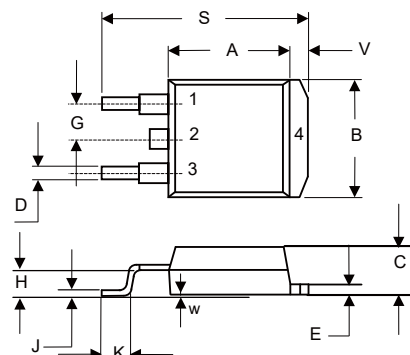
1. Gate
- 2,4. Drain
3. Source



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

N-CHANNEL MOSFET

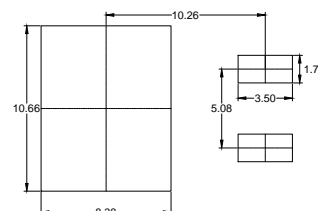
D²-PAK



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.10		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

Suggested Solder Pad Layout

Unit:mm



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3.1	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=80A$		1.2	1.5	m Ω
		$V_{GS}=6V, I_D=80A$		2.6	3.5	
Gate Resistance	R_g	f=1 MHz, Open drain		1.1		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				220	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$			1.3	V
Reverse Recovery Time	t_{rr}	$I_F=20A, di/dt=100A/\mu s$		58		ns
Reverse Recovery Charge	Q_{rr}			61.2		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		7864		pF
Output Capacitance	C_{oss}			2278		
Reverse Transfer Capacitance	C_{rss}			173		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=110A$		136		nC
Gate-Source Charge	Q_{gs}			40.3		
Gate-Drain Charge	Q_{gd}			43		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=20V, V_{GS}=10V, R_G=6\Omega, I_{DS}=110A$		36		ns
Turn-On Rise Time	t_r			319		
Turn-Off Delay Time	$t_{d(off)}$			74		
Turn-Off Fall Time	t_f			86		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

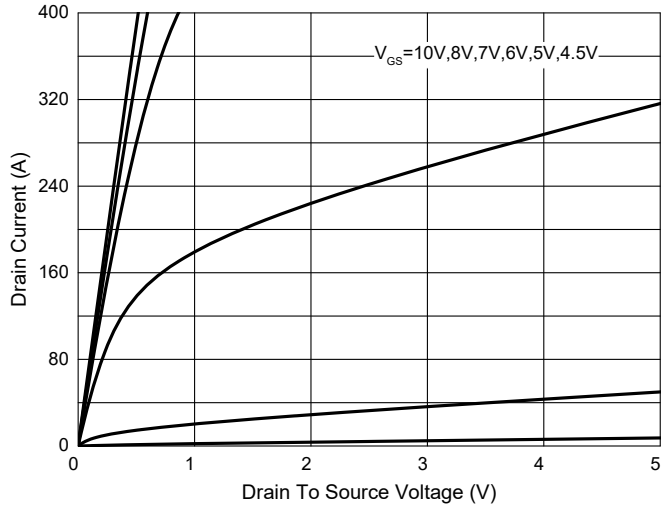


Fig. 2 - Transfer Characteristics

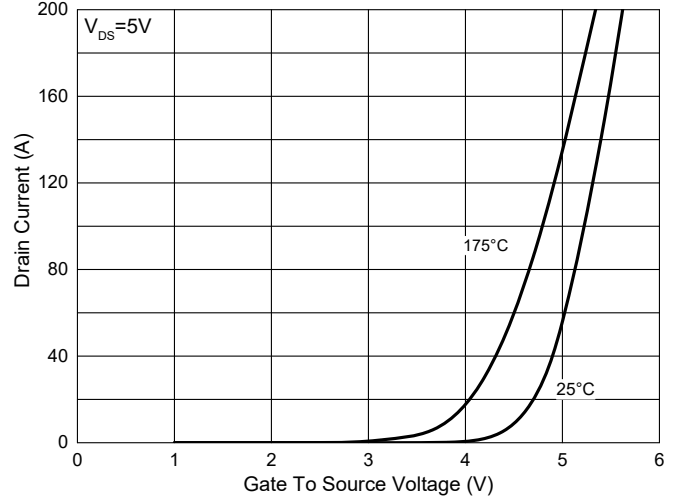


Fig. 3 - $R_{DS(ON)} - V_{GS}$

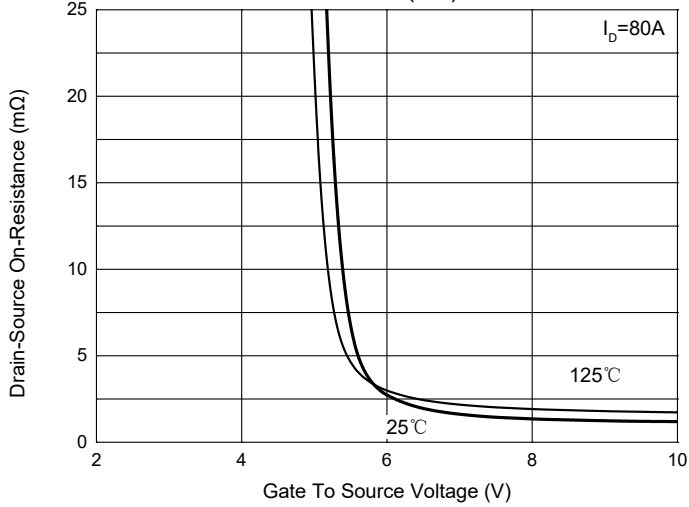


Fig. 4 - $R_{DS(ON)} - I_D$

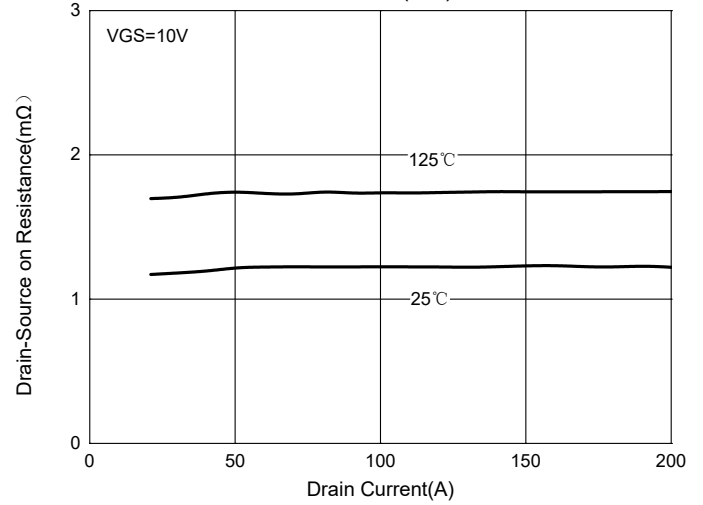


Fig. 5 - Capacitance Characteristics

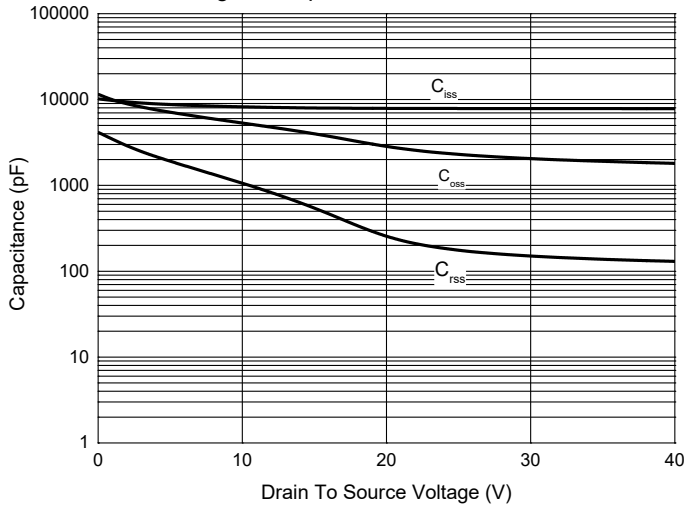
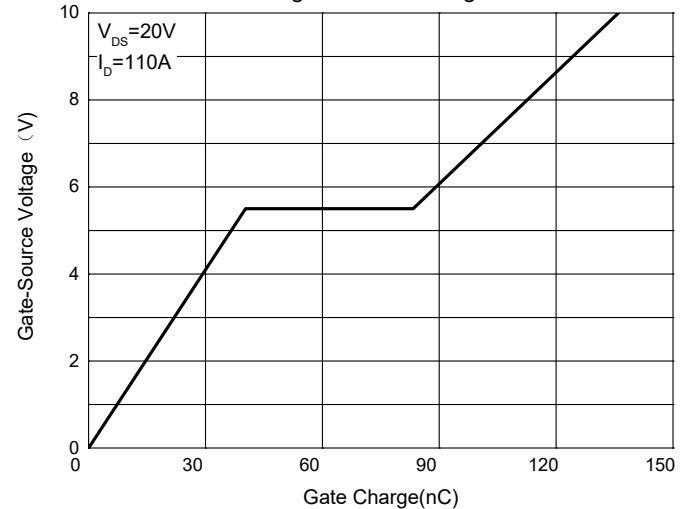


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

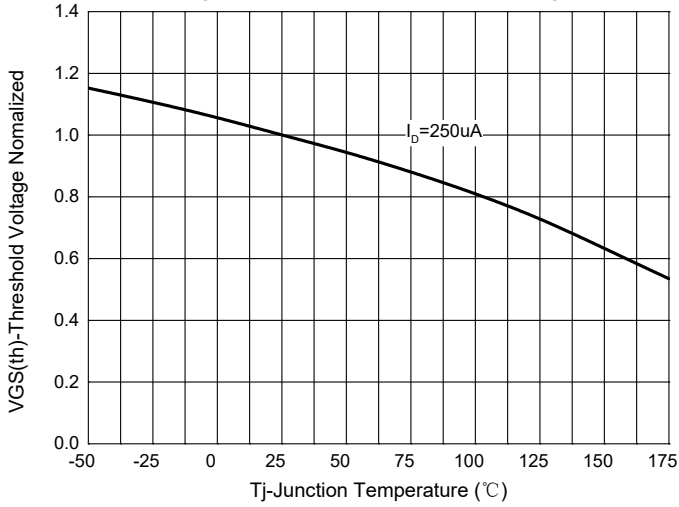


Fig.8-Normalized On Resistance Characteristics

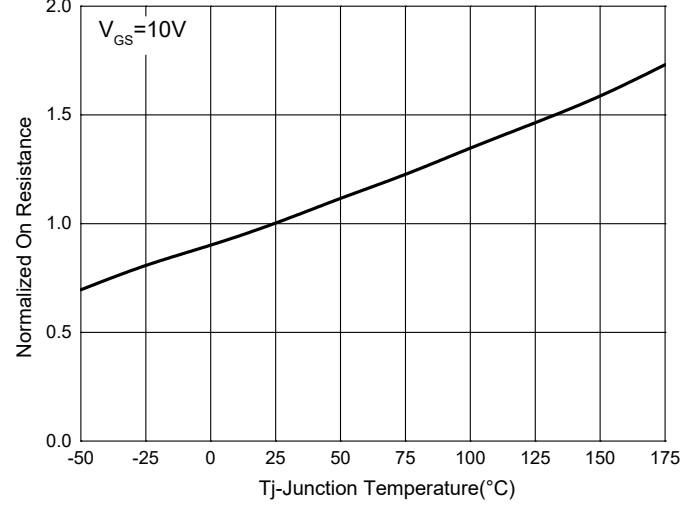


Fig.9 - I_S—V_{SD}

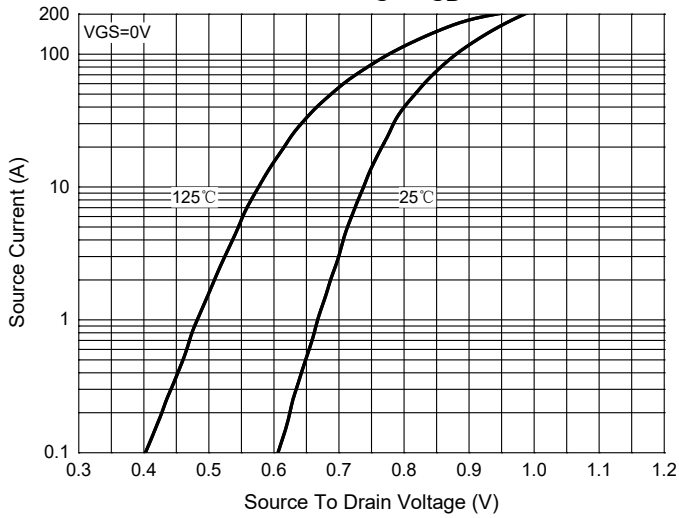


Fig. 10 - Drain Current

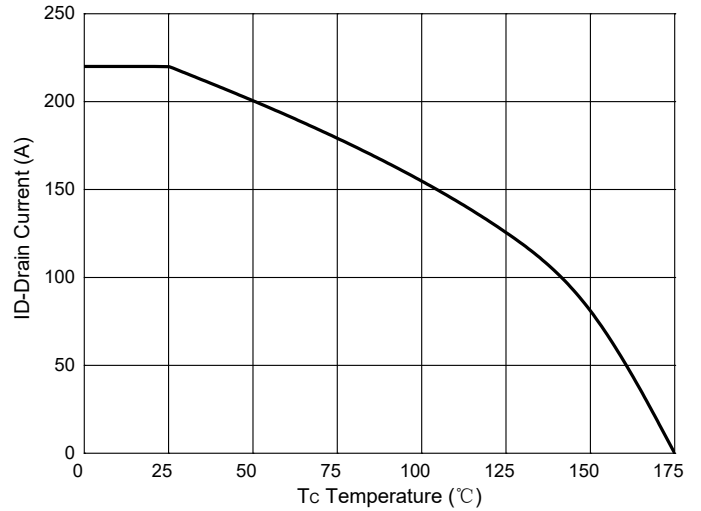
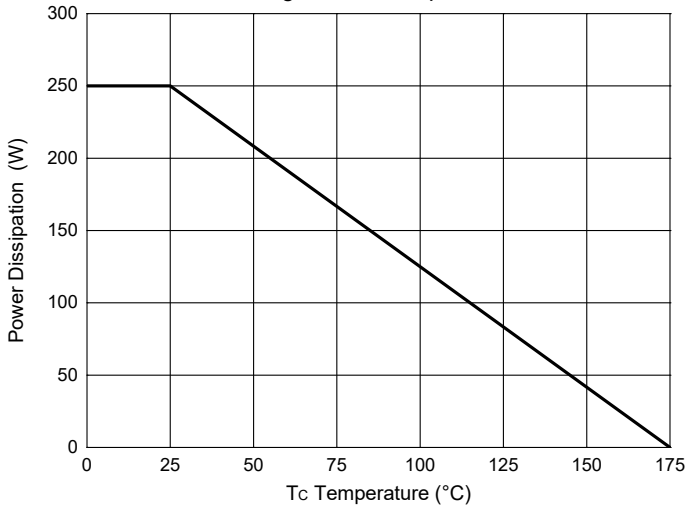


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

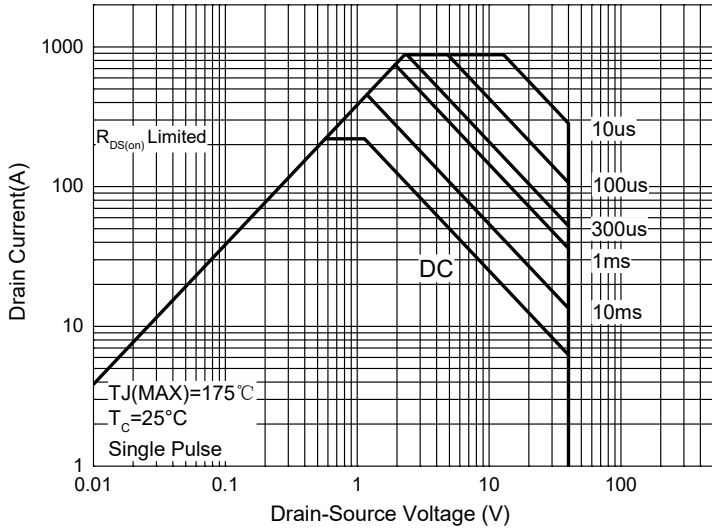
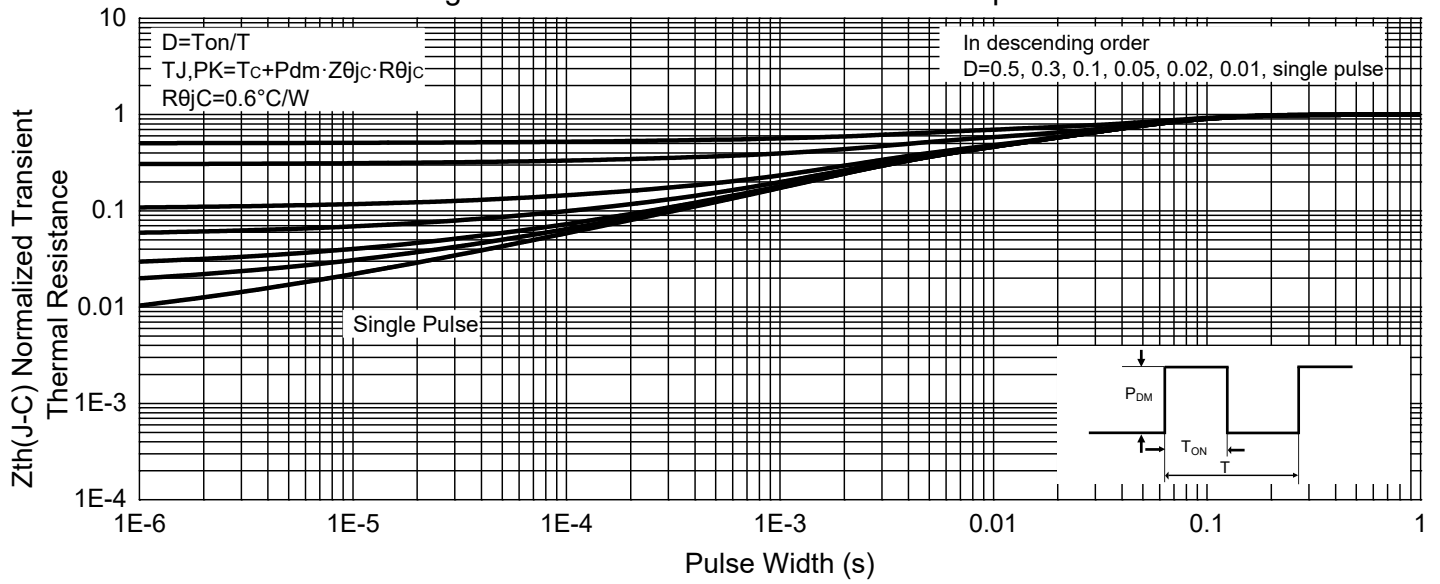


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel

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