

Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- 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)

Maximum Ratings

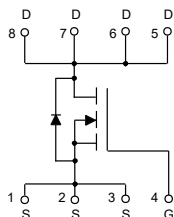
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 2.8°C/W Junction to Case⁽²⁾

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	53	A
		33	
	$T_C=25^\circ\text{C}$		
	$T_C=100^\circ\text{C}$		
Pulsed Drain Current ⁽³⁾	I_{DM}	186	A
Total Power Dissipation	P_D	45	W
Single Pulsed Avalanche Energy ⁽⁴⁾	E_{AS}	162	mJ

Note:

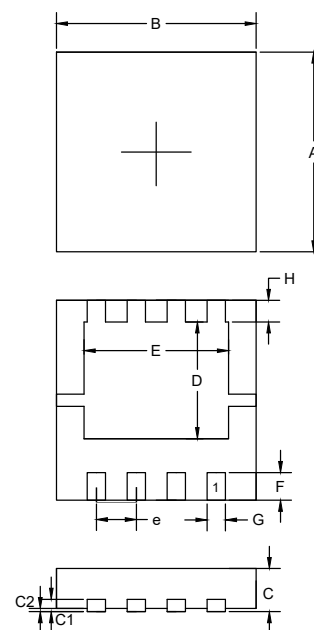
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on 1 in² pad area, $t \leq 10$ sec.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. $V_{DD}=50\text{V}$, $R_G=25\Omega$, $L=1\text{mH}$, $I_{AS}=18\text{A}$.

Internal Structure



N-CHANNEL MOSFET

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		7.3	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=200A/μs		36		ns
Reverse Recovery Charge	Q _{rr}			27		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =35V, V _{GS} =0V, f=1MHz		2000		pF
Output Capacitance	C _{oss}			390		
Reverse Transfer Capacitance	C _{rss}			13		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		34		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			5.2		
Turn-On Delay Time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, R _G =3Ω, I _{DS} =12A		10		ns
Turn-On Rise Time	t _r			36		
Turn-Off Delay Time	t _{d(off)}			30		
Turn-Off Fall Time	t _f			57		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

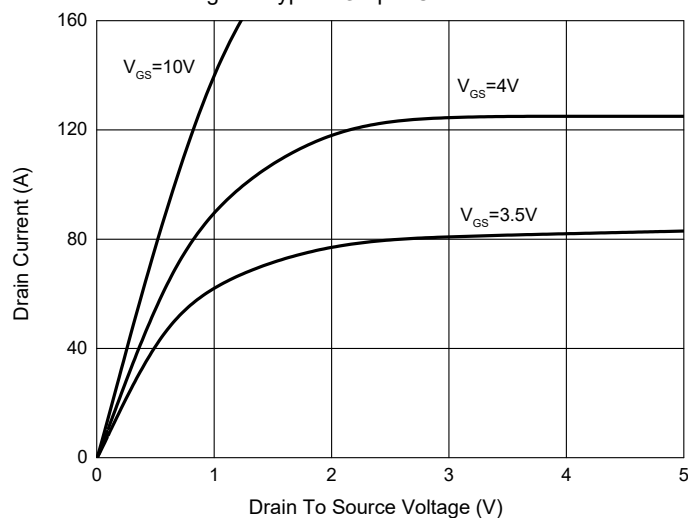


Fig. 2 - Transfer Characteristics

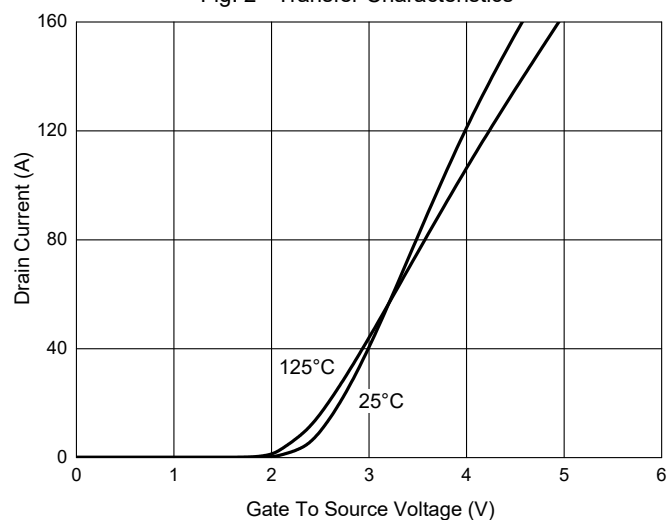


Fig. 3 - $R_{DS(ON)}-I_D$

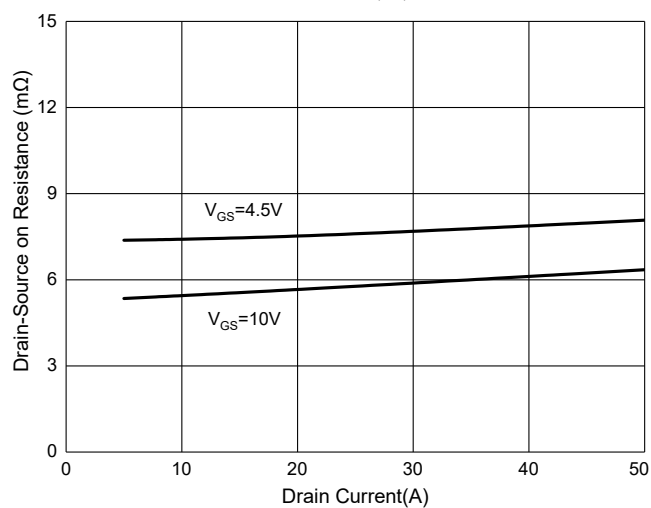


Fig. 4 - Normalized On Resistance Characteristics

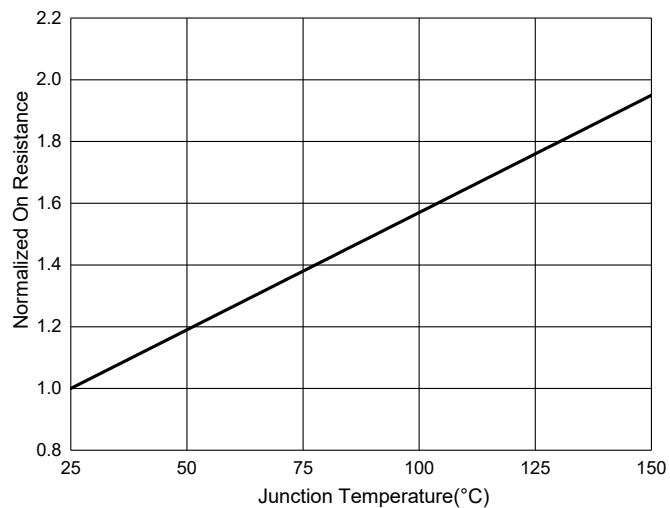


Fig. 5 - Capacitance Characteristics

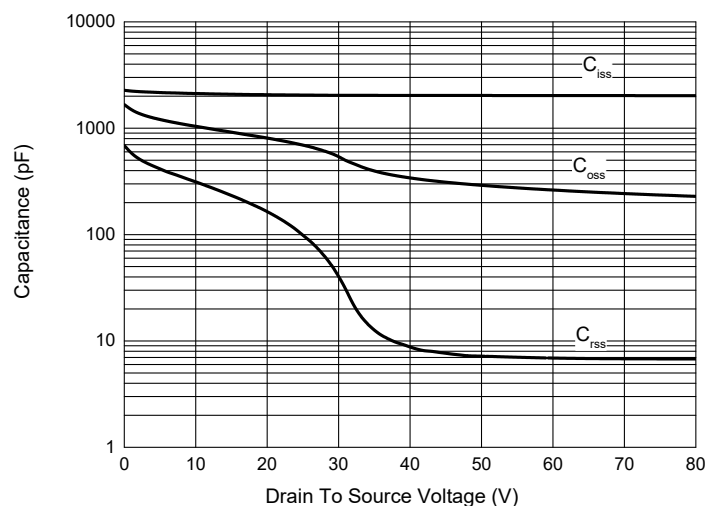
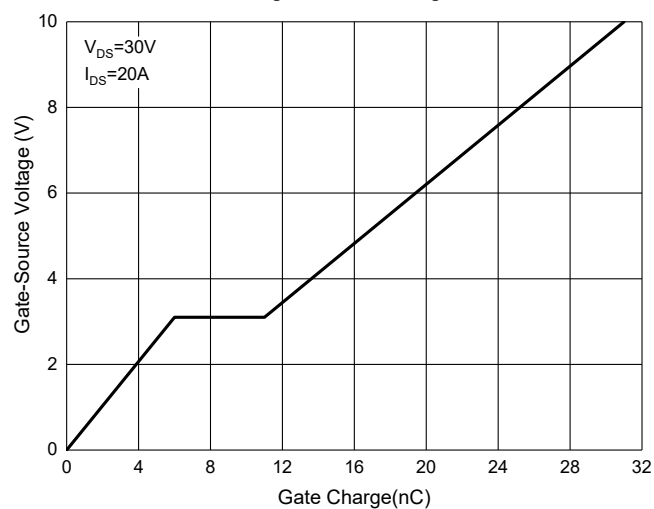
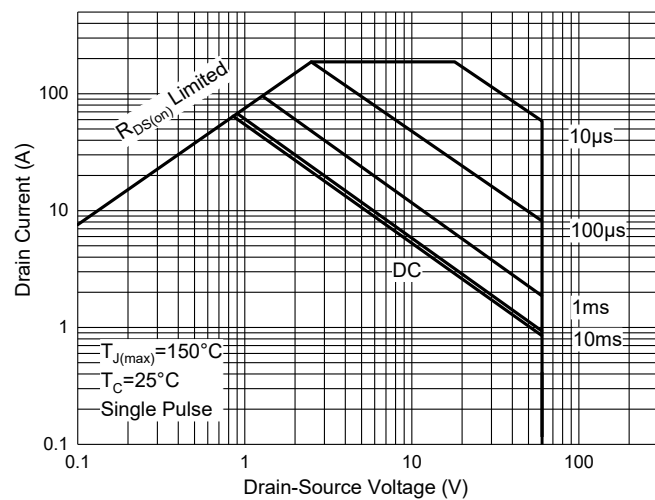


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Safe Operation Area



Ordering Information

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

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