

RoHS Compliant Product
A suffix of "-C" specifies halogen free

FEATURES

- Low $R_{DS(on)}$ trench technology.
- Low thermal impedance.
- Fast switching speed.

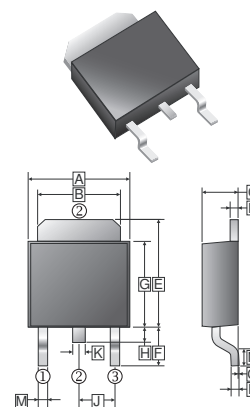
APPLICATION

- PoE Power Sourcing Equipment.
- PoE Powered Devices.
- Telecom DC/DC converters.
- White LED boost converters.

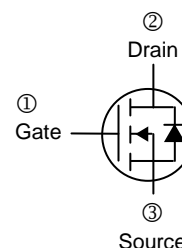
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13' inch

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.4	6.8	J	2.30	REF.
B	5.20	5.50	K	0.70	0.90
C	2.20	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.6
E	6.8	7.3	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.2			
H	0.8	1.20			



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $T_C=25^\circ\text{C}$ ¹	I_D	26	A
Pulsed Drain Current ²	I_{DM}	50	A
Continuous Source Current (Diode Conduction) ¹	I_S	50	A
Total Power Dissipation @ $T_C=25^\circ\text{C}$ ¹	P_D	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	$^\circ\text{C}$
Thermal Resistance Rating			
Maximum Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	50	$^\circ\text{C} / \text{W}$
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	3.0	$^\circ\text{C} / \text{W}$

Notes :

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

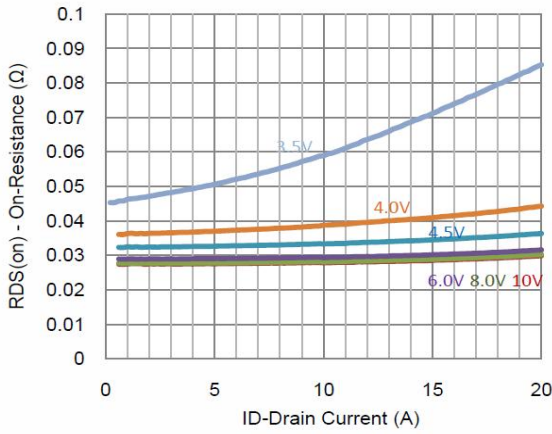
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	1.0	-	3.5	V	$V_{DS}=V_{GS}$, $I_D = 250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS}=0$, $V_{GS}=20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=80\text{V}$, $V_{GS}=0$
		-	-	25		$V_{DS}=80\text{V}$, $V_{GS}=0$, $T_J=55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	34	-	-	A	$V_{DS}=5\text{V}$, $V_{GS}=10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	36	m Ω	$V_{GS}=10\text{V}$, $I_D=10\text{A}$
		-	-	42		$V_{GS}=4.5\text{V}$, $I_D=9.2\text{A}$
Forward Transconductance ¹	g_{fs}	-	10	-	S	$V_{DS}=15\text{V}$, $I_D=10\text{A}$
Diode Forward Voltage	V_{SD}	-	0.89	-	V	$I_S=25\text{A}$, $V_{GS}=0$
Dynamic ²						
Total Gate Charge	Q_g	-	14.8	-	nC	$V_{DS}=50\text{V}$ $V_{GS}=4.5\text{V}$ $I_D=10\text{A}$
Gate-Source Charge	Q_{gs}	-	4.3	-		
Gate-Drain Charge	Q_{gd}	-	8.6	-		
Turn-on Delay Time	$T_{d(on)}$	-	4.8	-	nS	$V_{DD}=50\text{V}$ $R_L=5\Omega$ $I_D=10\text{A}$ $V_{GEN}=10\text{V}$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	14.2	-		
Turn-off Delay Time	$T_{d(off)}$	-	39.2	-		
Fall Time	T_f	-	25.6	-		
Input Capacitance	C_{iss}		1216		pF	$V_{DS}=15\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}		154			
Reverse Transfer Capacitance	C_{rss}	-	131	-		

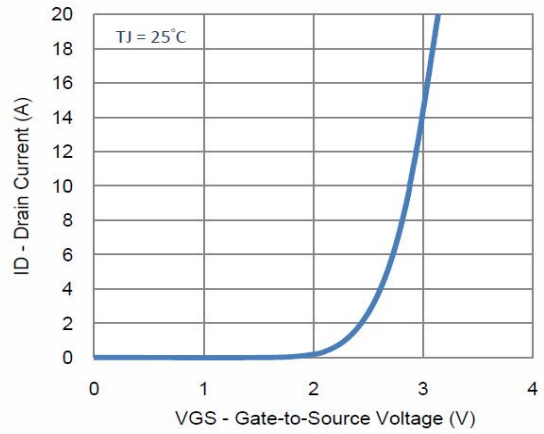
Notes:

1. Pulse test : $PW \leq 300\text{ us}$ duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

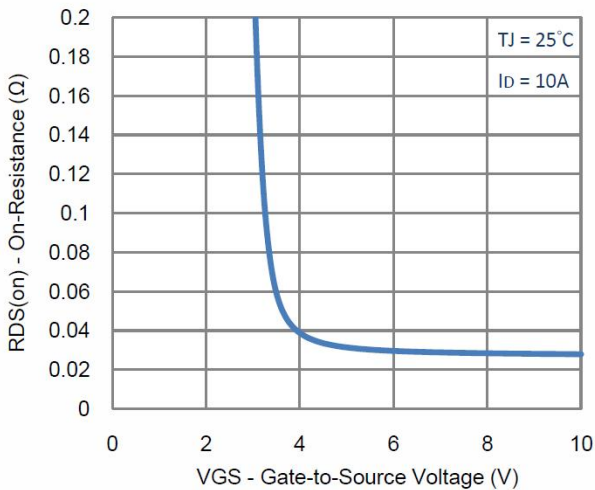
CHARACTERISTIC CURVES



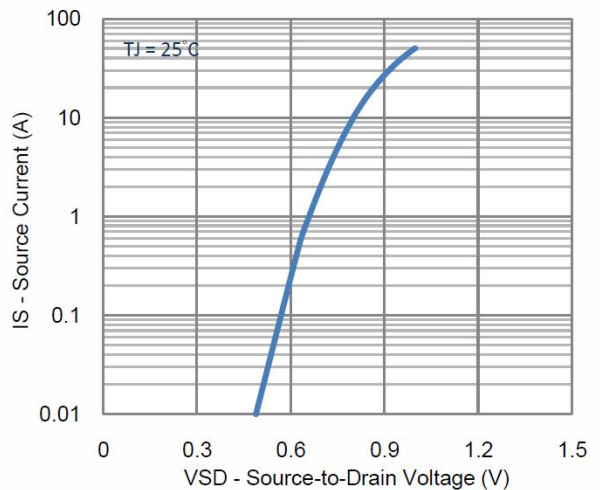
1. On-Resistance vs. Drain Current



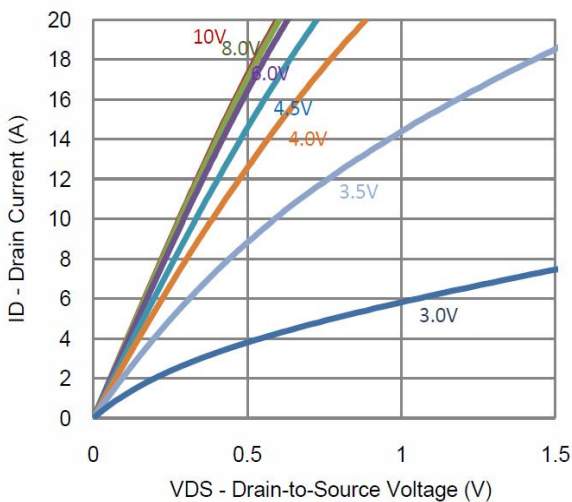
2. Transfer Characteristics



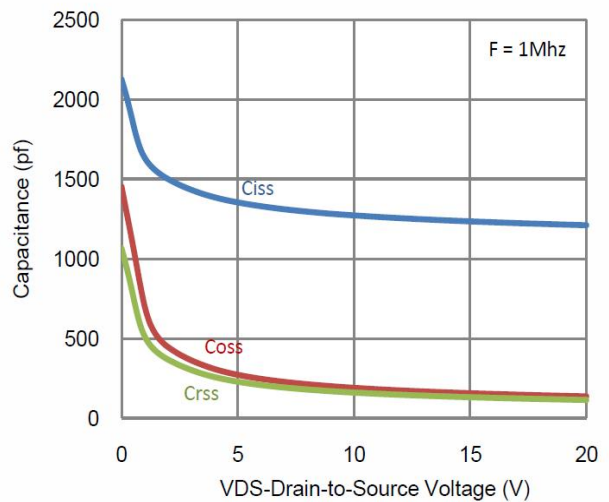
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

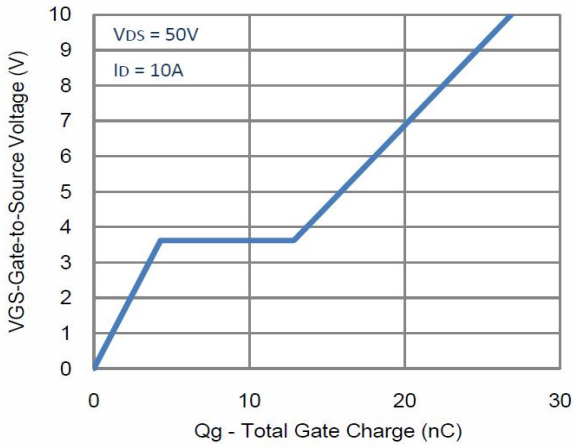


5. Output Characteristics

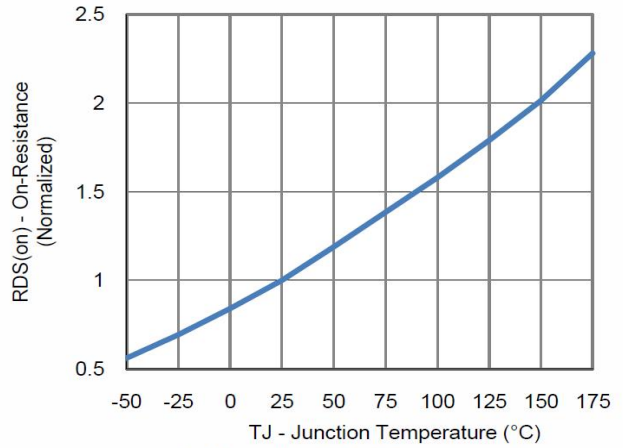


6. Capacitance

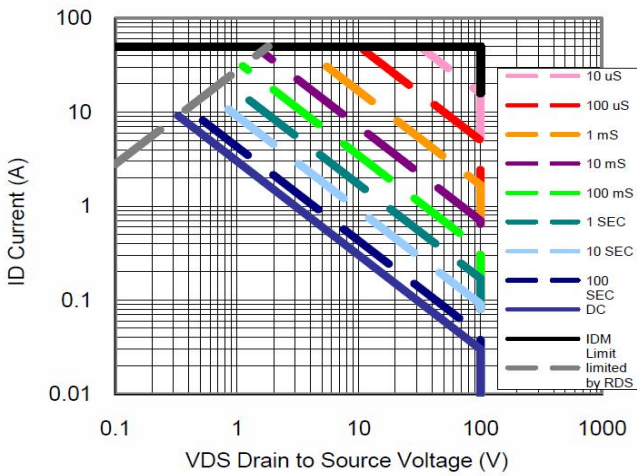
CHARACTERISTIC CURVES



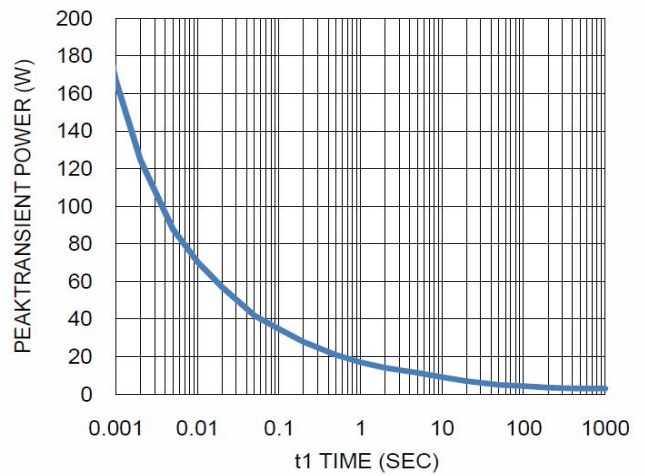
7. Gate Charge



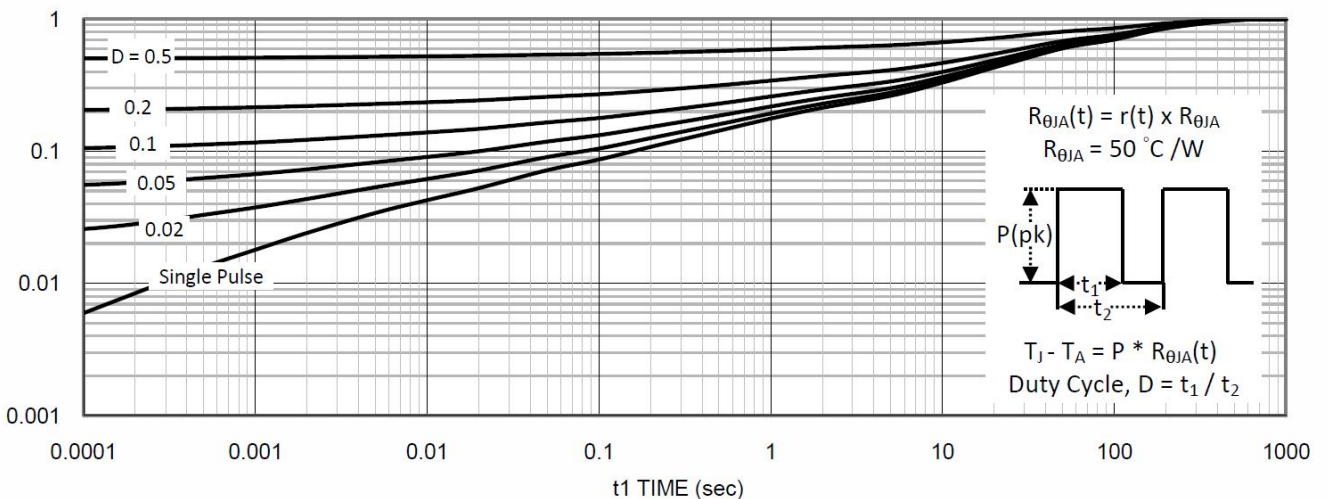
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient