

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

DESCRIPTION

These miniature surface mount MOSFET utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe TO-252 saves board space
- Fast switching speed
- High performance trench technology

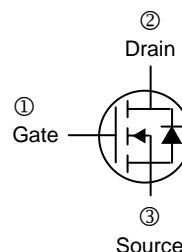
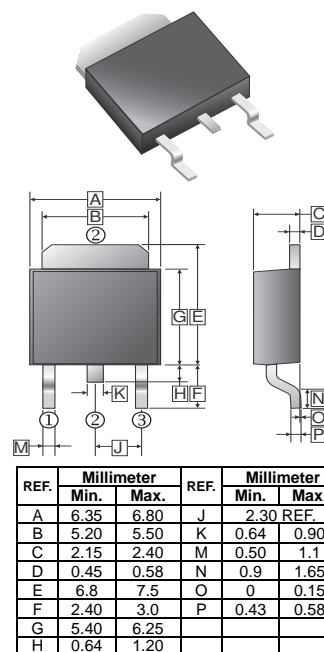
APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

TO-252(D-Pack)



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	10.9	A
Pulsed Drain Current ²	I_{DM}	40	A
Continuous Source Current (Diode Conduction) ¹	I_S	46	A
Total Power Dissipation 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	$R_{\theta JA}$	40	$^\circ\text{C} / \text{W}$
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	3	$^\circ\text{C} / \text{W}$

Note:

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

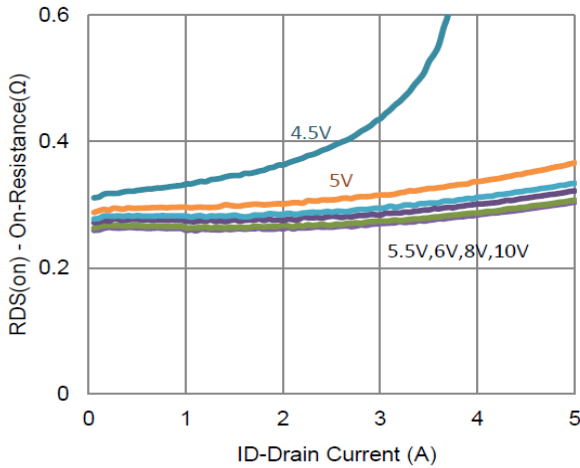
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	1.0	-	-	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS}=0$, $V_{GS}=\pm 20V$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=200V$, $V_{GS}=0$
		-	-	25		$V_{DS}=200V$, $V_{GS}=0$, $T_J=55^\circ C$
On-State Drain Current ¹	$I_{D(on)}$	14	-	-	A	$V_{DS}=5V$, $V_{GS}=10V$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	280	m Ω	$V_{GS}=10V$, $I_D=3A$
		-	-	340		$V_{GS}=5.5V$, $I_D=2.4A$
Forward Transconductance ¹	g_{fs}	-	4	-	S	$V_{DS}=15V$, $I_D=3A$
Diode Forward Voltage	V_{SD}	-	0.95	-	V	$I_S=23.1A$, $V_{GS}=0$
Dynamic ²						
Total Gate Charge	Q_g	-	16	-	nC	$V_{DS}=120V$ $V_{GS}=5.5V$ $I_D=3A$
Gate-Source Charge	Q_{gs}	-	7.1	-		
Gate-Drain Charge	Q_{gd}	-	6.8	-		
Turn-on Delay Time	$T_{d(on)}$	-	22	-	nS	$V_{DS}=120V$ $I_D=3A$ $V_{GEN}=10V$ $R_L=40\Omega$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	25	-		
Turn-off Delay Time	$T_{d(off)}$	-	55	-		
Fall Time	T_f	-	43	-		
Input Capacitance	C_{iss}	-	1691	-	pF	$V_{GS}=0$ $V_{DS}=15V$ $f=1.0MHz$
Output Capacitance	C_{oss}	-	117	-		
Reverse Transfer Capacitance	C_{rss}	-	65	-		

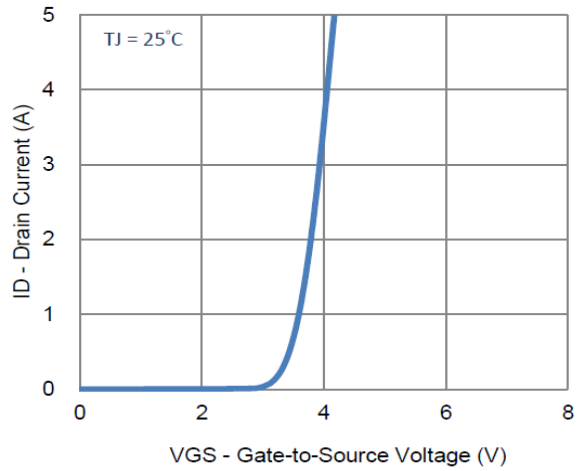
Notes:

1. Pulse test : Pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

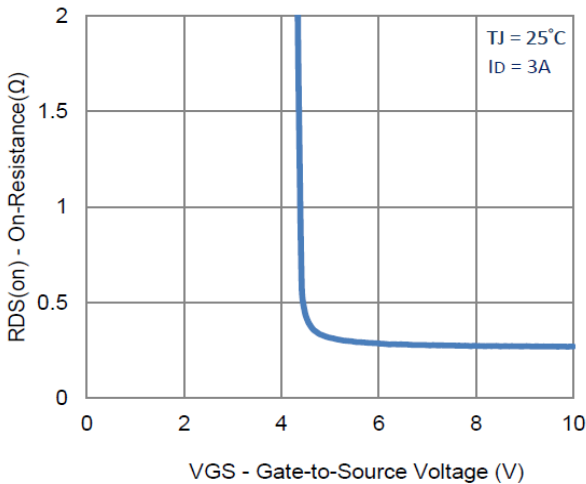
CHARACTERISTIC CURVE



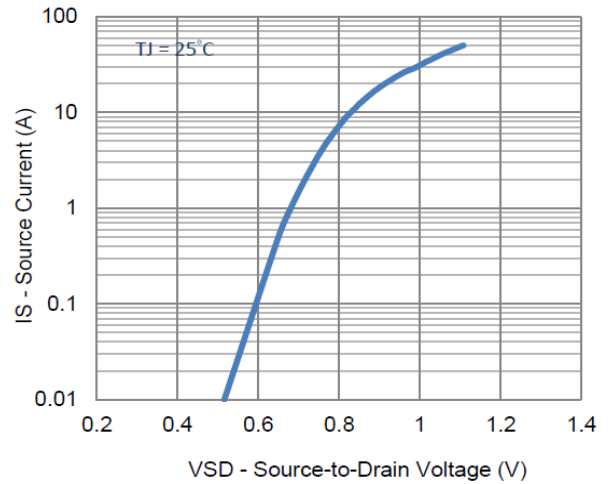
1. On-Resistance vs. Drain Current



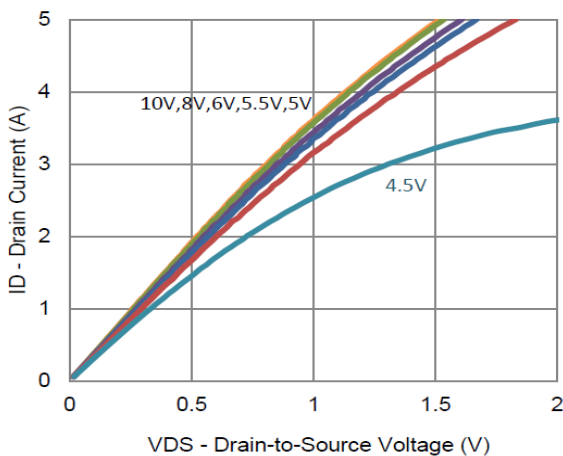
2. Transfer Characteristics



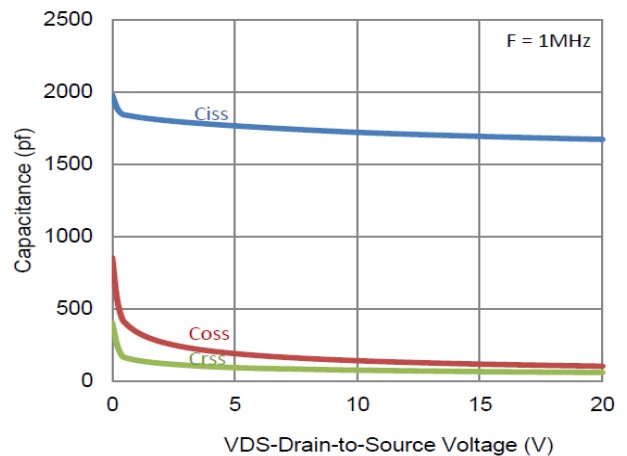
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

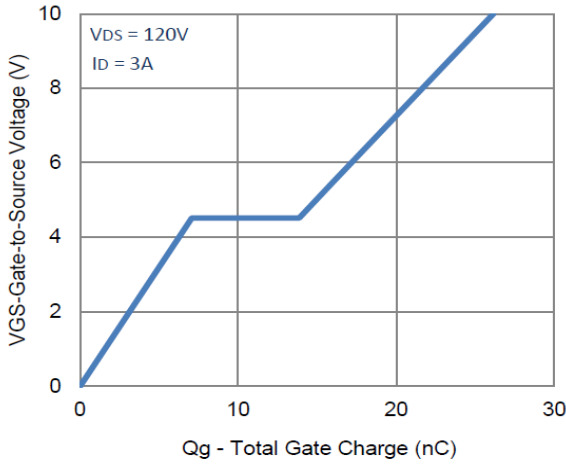


5. Output Characteristics

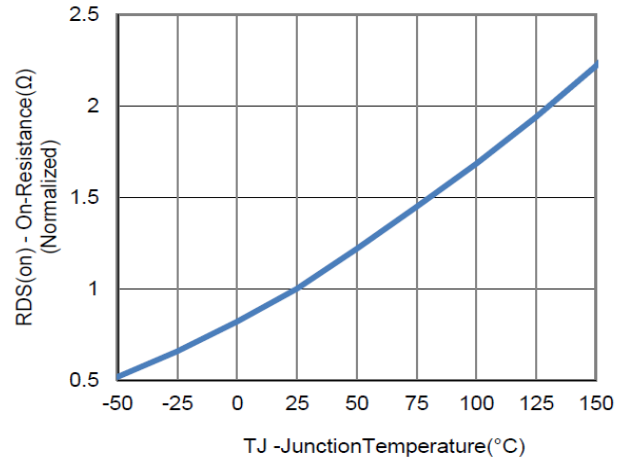


6. Capacitance

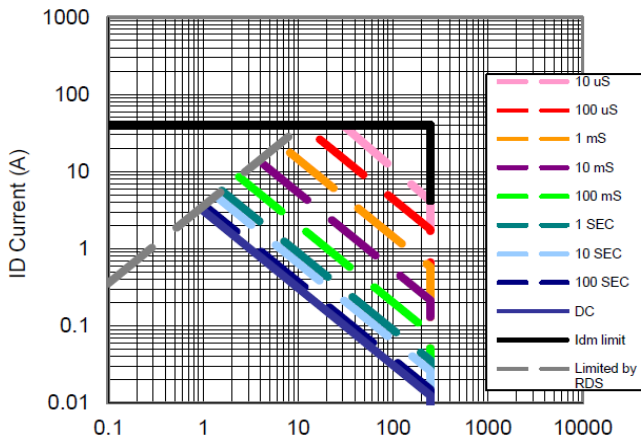
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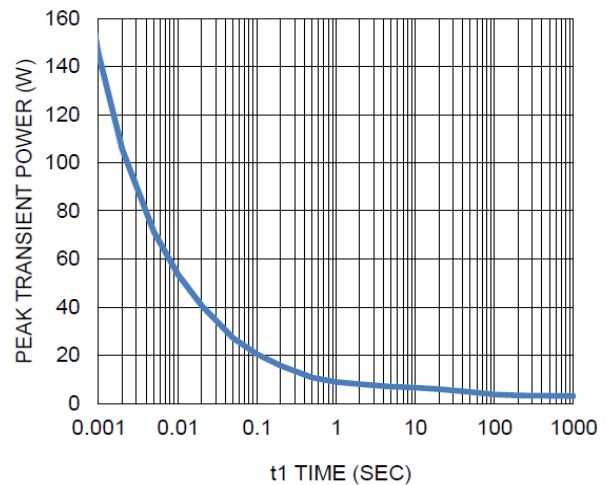
7. Gate Charge



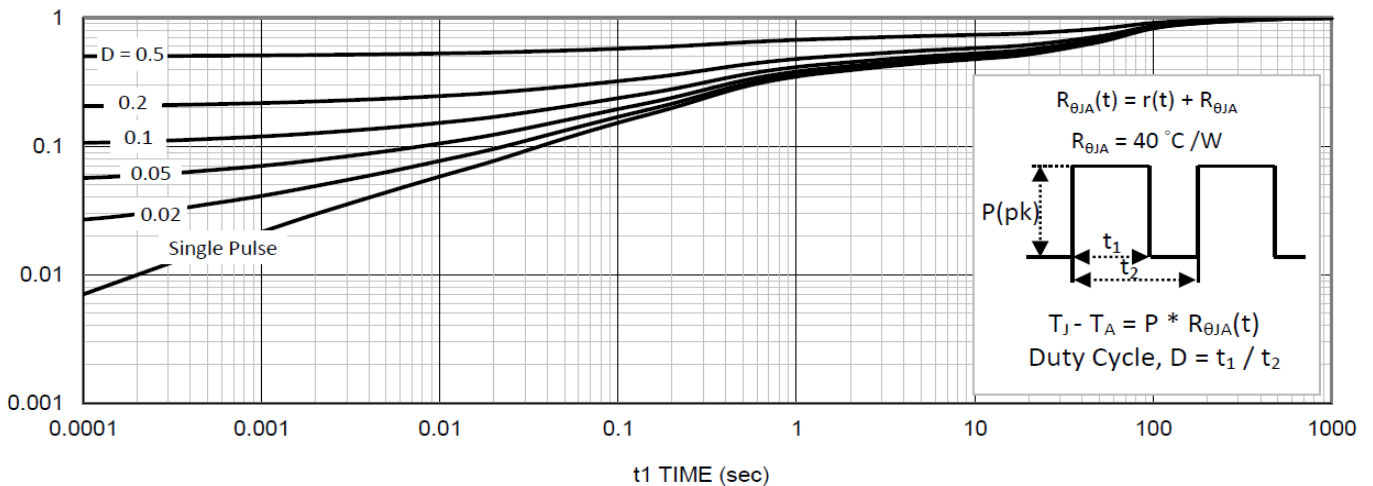
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient