

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

DESCRIPTION

These miniature surface mount MOSFETs utilize high cell density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

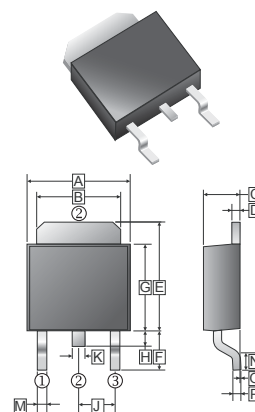
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Miniature TO-252 surface mount package saves board space.
- High power and current handling capability.
- Low side high current DC-DC converter applications.

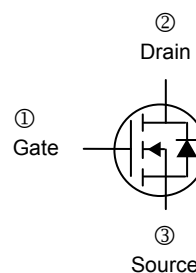
PACKAGE INFORMATION

Package	MPQ	LeaderSize
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	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D @ T_C=25^\circ\text{C}$	75	A
Pulsed Drain Current ²	I_{DM}	40	A
Continuous Source Current (Diode Conduction) ¹	I_S	30	A
Total Power Dissipation ¹	$P_D @ T_C=25^\circ\text{C}$	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	$^\circ\text{C}$
Thermal Resistance Ratings			
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	-	-	V	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS}=0\text{V}$, $V_{GS}=20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$
		-	-	25		$V_{DS}=24\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$
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	$R_{DS(ON)}$	-	-	6	m Ω	$V_{GS}=10\text{V}$, $I_D=75\text{A}$
		-	-	8		$V_{GS}=4.5\text{V}$, $I_D=65\text{A}$
Forward Transconductance ¹	g_{fs}	-	22	-	S	$V_{DS}=15\text{V}$, $I_D=75\text{A}$
Diode Forward Voltage	V_{SD}	-	1.1	-	V	$I_S=34\text{A}$, $V_{GS}=0\text{V}$
Dynamic ²						
Total Gate Charge	Q_g	-	25.5	-	nC	$V_{DS}=15\text{V}$ $V_{GS}=4.5\text{V}$ $I_D=75\text{A}$
Gate-Source Charge	Q_{gs}	-	6.6	-		
Gate-Drain Charge	Q_{gd}	-	9.0	-		
Turn-on Delay Time	$T_{d(on)}$	-	16	-	nS	$V_{DD}=25\text{V}$ $I_D=34\text{A}$ $V_{GEN}=10\text{V}$ $R_L=25\Omega$
Rise Time	T_r	-	5	-		
Turn-off Delay Time	$T_{d(off)}$	-	23	-		
Fall Time	T_f	-	3	-		

Notes :

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

CHARACTERISTICS CURVE

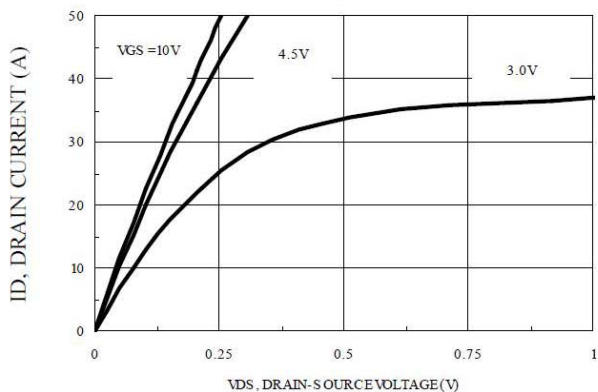


Figure 1. Output Characteristics

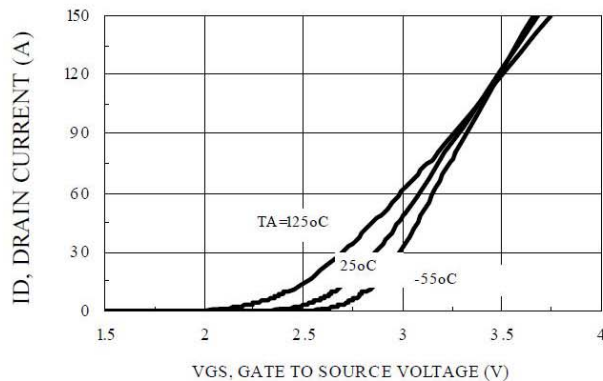


Figure 2. Transfer Characteristics

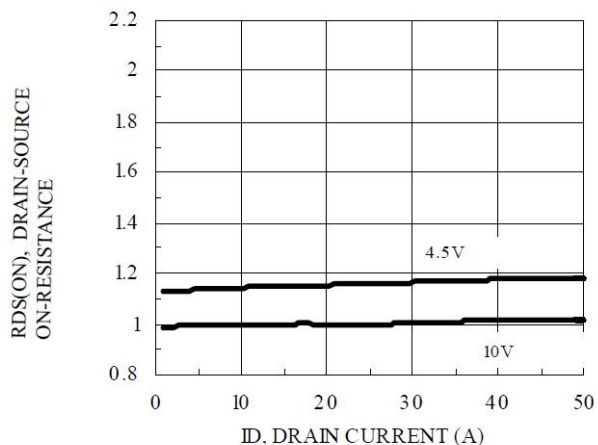


Figure 3. On-Resistance vs. Drain Current

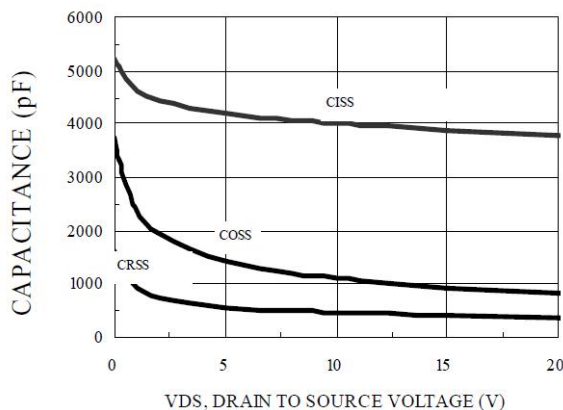


Figure 4. Capacitance

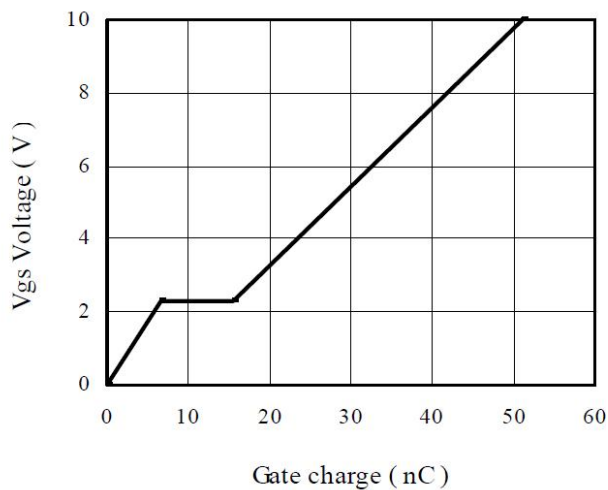


Figure 5. Gate Charge

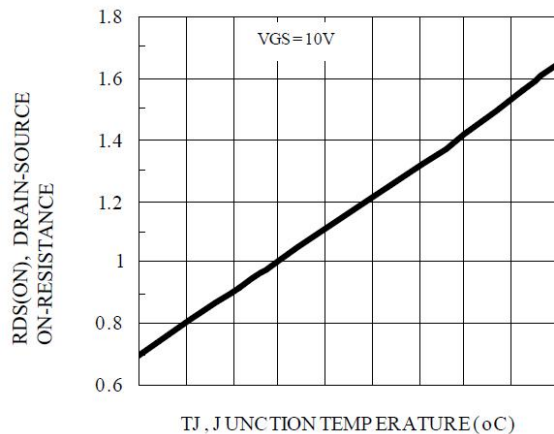


Figure 6. On-Resistance vs. Junction Temperature

CHARACTERISTICS CURVE

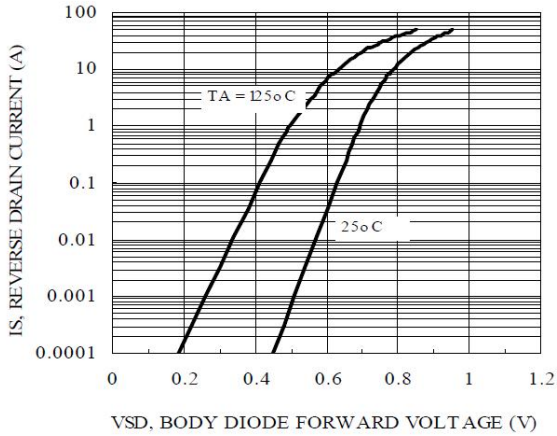


Figure 7. Source-Drain Diode Forward Voltage

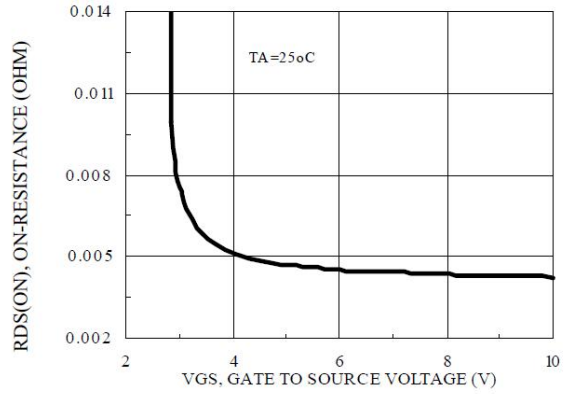


Figure 8. On-Resistance vs. Gate-to-Source Voltage

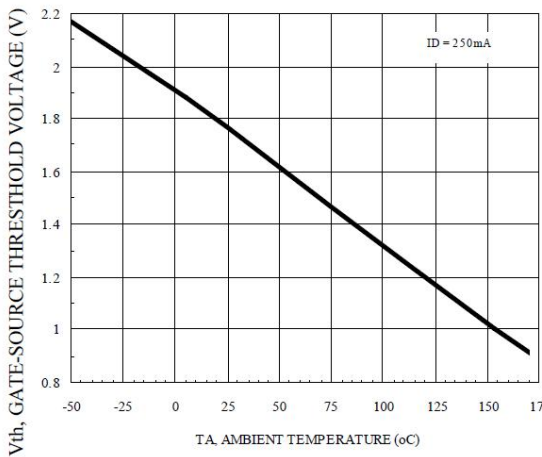


Figure 9. Threshold Voltage

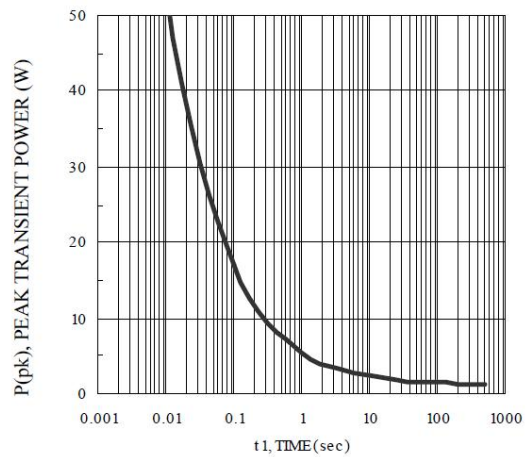


Figure 10. Single Pulse Power

Figure 11. Normalized Thermal Transient Impedance, Junction-to-Ambient

