

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.

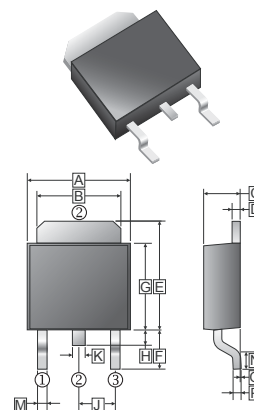
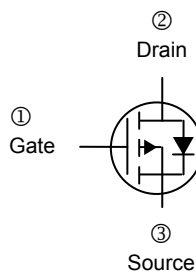
TO-252(D-Pack)

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.
- Extended V_{GS} range (± 25) for battery pack applications.

PRODUCT SUMMARY

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$V_{DS}(V)$	$R_{DS(on)} m(\Omega)$	$I_D(A)$
-60	49@ $V_{GS} = -10V$	28
	60@ $V_{GS} = -4.5V$	24



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^a	$I_D @ T_A = 25^\circ C$	61	A
Pulsed Drain Current ^b	I_{DM}	± 40	A
Continuous Source Current (Diode Conduction) ^a	I_S	-30	A
Total Power Dissipation ^a	$P_D @ T_A = 25^\circ C$	50	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	$^\circ C$
THERMAL RESISTANCE RATINGS			
Maximum Thermal Resistance Junction-Ambient ^a	$R_{\theta JA}$	50	$^\circ C / W$
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	3.0	$^\circ C / W$

Notes :

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

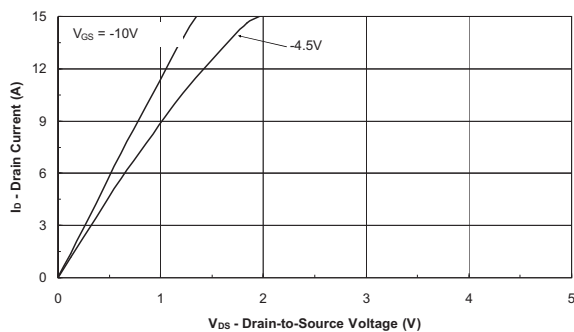
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-		$V_{DS} = V_{GS}$, $I_D = -250 \mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -48\text{V}$, $V_{GS} = 0\text{V}$
		-	-	-10		$V_{DS} = -48\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 55^\circ\text{C}$
On-State Drain Current ^a	$I_{D(on)}$	-20	-	-	A	$V_{DS} = -5\text{V}$, $V_{GS} = -10\text{V}$
Drain-Source On-Resistance ^a	$R_{DS(ON)}$	-	-	49	m Ω	$V_{GS} = -10\text{V}$, $I_D = -28\text{A}$
		-	-	60		$V_{GS} = -4.5\text{V}$, $I_D = -24\text{A}$
Forward Transconductance ^a	g_{fs}	-	8	-	S	$V_{DS} = -15\text{V}$, $I_D = -28\text{A}$
Diode Forward Voltage	V_{SD}	-	-	-1.2	V	$I_S = -2.5\text{A}$, $V_{GS} = 0\text{V}$
Dynamic ^b						
Total Gate Charge	Q_g	-	18	-	nC	$V_{DS} = -30\text{V}$ $V_{GS} = -4.5\text{V}$ $I_D = -28\text{A}$
Gate-Source Charge	Q_{gs}	-	5	-		
Gate-Drain Charge	Q_{gd}	-	2	-		
Turn-on Delay Time	$T_{d(on)}$	-	8	-	nS	$V_{DD} = -30\text{V}$ $I_D = -1\text{A}$ $V_{GEN} = -10\text{V}$ $R_L = 30\Omega$ $R_G = 6\Omega$
Rise Time	T_r	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	35	-		
Fall Time	T_f	-	12	-		

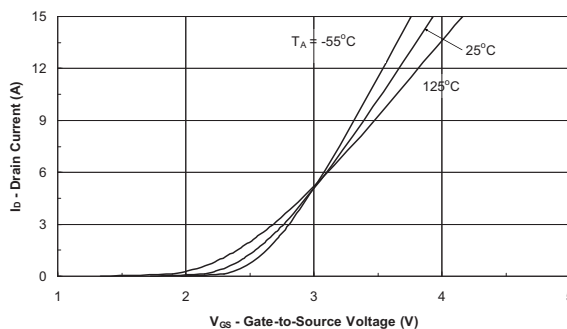
Notes

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

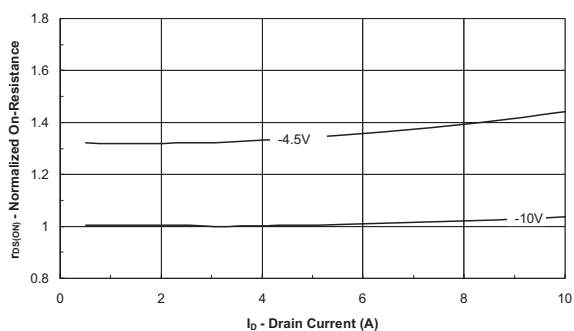
CHARACTERISTIC CURVE



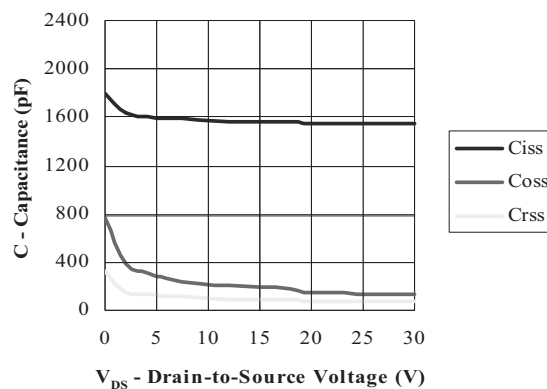
Output Characteristics



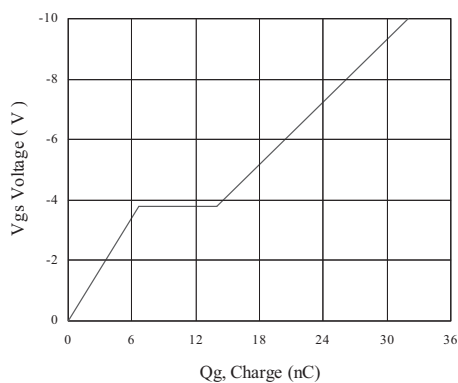
Transfer Characteristics



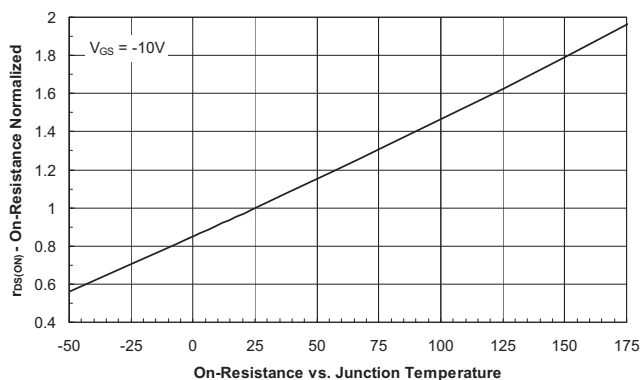
On-Resistance vs. Drain Current



Capacitance

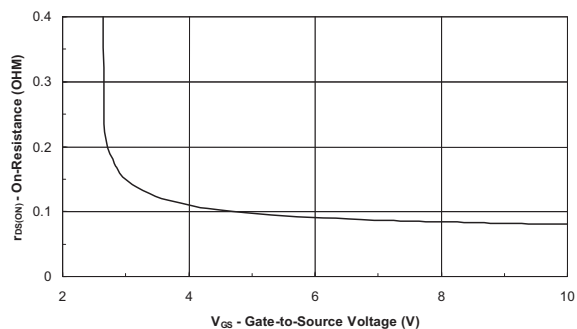
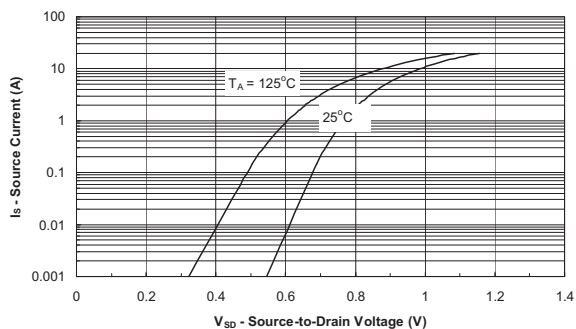


Gate Charge

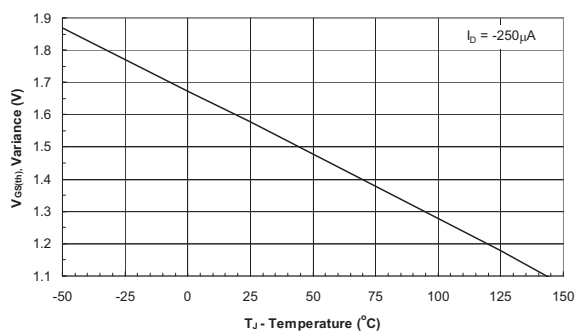


On-Resistance vs. Junction Temperature

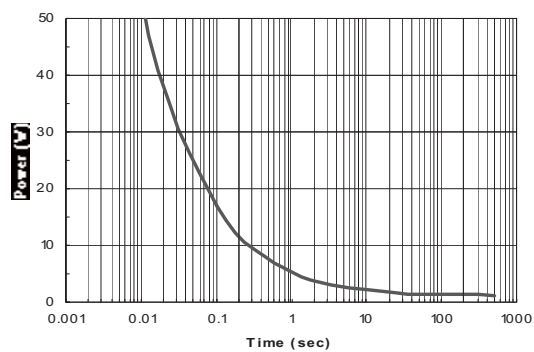
CHARACTERISTIC CURVE



Source-Drain Diode Forward Voltage

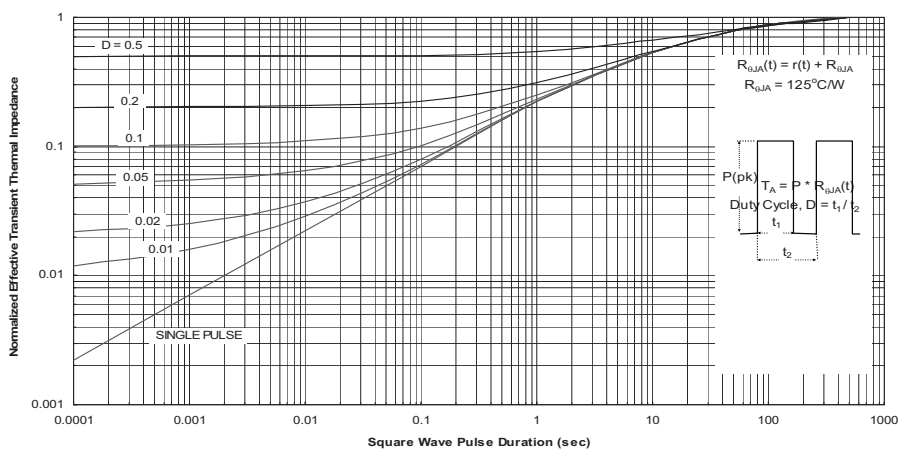


On-Resistance vs. Gate-to Source Voltage



Threshold Voltage

Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient